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IONOSPHERIC DATA

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WASHINGTON, D. C.

IONOSPHERIC DATA

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SYMBOLS AND TERMINOLOGY; CONVENTIONS FOR DETERMINING MEDIAN VALUES

Beginning with data reported for January 1949, the symbols, terminology, and conventions for the determination of median values used in this report (CRPL-F series) conform as far as practicable to those adopted at the Fifth Meeting of the International Radio Consultative Committee (C.C.I.R.) in Stockholm, 1948, and given in detail on pages 2 to 10 of the report CRPL-F53, "Ionospheric Data," issued January 1949.

For symbols and terminology used with data prior to January 1949, see report IRPL-C61, "Report of International Radio Propagation Conference, Washington, 17 April to 5 May, 1944," previous issues of the F series, in particular, IRPL-F5, CRPL-F24, F33, F50, and report CRPL-7-1, "Preliminary Instructions for Obtaining and Reducing Manual Ionospheric Records."

Following the recommendations of the Washington (1944) and Stockholm (1948) conferences, beginning with data for January 1945, median values are published wherever possible. Where averages are reported, they are, at any hour, the average for all the days during the month for which numerical data exist.

In addition to the conventions for the determination of medians given in Appendix 5 of Document No. 293 E of the Stockholm conference, which are listed on pages 9 and 10 of CRPL-F53, the following conventions are used in determining the medians for hours when no measured values are given because of equipment limitations and ionospheric irregularities. Symbols used are those given on pages 2-9 of CRPL-F53 (Appendixes 1-4 of Document No. 293 E referred to above).

a. For all ionospheric characteristics:

Values missing because of A, B, C, F, L, M, N, Q, R, S, or T (see terminology referred to above) are omitted from the median count.

b. For critical frequencies and virtual heights:

Values of f_oF_2 (and f_oE near sunrise and sunset) missing because of E are counted as equal to or less than the lower limit of the recorder. Values of $h'F_2$ (and $h'E$ near sunrise and sunset) missing for this reason are counted as equal to or greater than the median. Other characteristics missing because of E are omitted from the median count. See CRPL-F38, page 9.

Values missing because of D are counted as equal to or greater than the upper limit of the recorder.

Values missing because of G are counted:

1. For foF2, as equal to or less than foF1.
2. For h'F2, as equal to or greater than the median.

Values missing because of W are counted:

1. For foF2, as equal to or less than the median when it is apparent that h'F2 is unusually high; otherwise, values missing because of W are omitted from the median count.
2. For h'F2, as equal to or greater than the median.

Values missing for any other reason are omitted from the median count.

c. For MUF factor (M-factors):

Values missing because of G or W are counted as equal to or less than the median.

Values missing for any other reason are omitted from the median count.

d. For sporadic E (Es):

Values of fEs missing because of G (no Es reflections observed, the equipment functioning normally otherwise) are counted as equal to or less than the median foE, or equal to or less than the lower frequency count of the recorder.

Values of fEs missing for any other reason, and values of h'Es missing for any reason at all are omitted from the median count.

Beginning with data for November 1945, doubtful monthly median values for ionospheric observations at Washington, D. C., are indicated by parentheses, in accordance with the practice already in use for doubtful hourly values. The following are the conventions used to determine whether or not a median value is doubtful:

1. If only four values or less are available, the data are considered insufficient and no median value is computed.

2. For the F2 layer, if only five to nine values are available, the median is considered doubtful. The E and F1 layers are so regular in their characteristics that, as long as there are at least five values, the median is not considered doubtful.

3. For all layers, if more than half of the values used to compute the median are doubtful (either doubtful or interpolated), the median is considered doubtful.

The same conventions are used by the CRPL in computing the medians from tabulations of daily and hourly data for stations other than Washington, beginning with the tables in IRPL-F18.

MONTHLY AVERAGE AND MEDIAN VALUES OF WORLD - WIDE IONOSPHERIC DATA

The ionospheric data given here in tables 1 to 35 and figures 1 to 70 were assembled by the Central Radio Propagation Laboratory for analysis and correlation, incidental to CRPL prediction of radio propagation conditions. The data are median values unless otherwise indicated. The following are the sources of the data in this issue:

Commonwealth of Australia, Ionospheric Prediction Service of the
Commonwealth Observatory:

Brisbane, Australia
Canberra, Australia
Hobart, Tasmania

Australian Department of Supply and Shipping, Bureau of Mineral
Resources, Geology and Physics:
Watheroo, West Australia

Institute for Ionospheric Research, Lindau Uber Northeim, Hannover,
Germany:
Lindau/Harz, Germany

The Royal Netherlands Meteorological Institute:
De Bilt, Holland

All India Radio (Government of India), New Delhi, India:
Bombay, India
Delhi, India
Madras, India
Tiruchy (Tiruchirapalli), India

Indian Council of Scientific and Industrial Research, Radio Committee:
Calcutta, India

Norwegian Defence Research Establishment, Kjeller per Lillestrom,
Norway:
Oslo, Norway

South African Council for Scientific and Industrial Research:
Capetown, Union of South Africa
Johannesburg, Union of South Africa

United States Army Signal Corps:
Okinawa I.

National Bureau of Standards (Central Radio Propagation Laboratory):
 Baton Rouge, Louisiana (Louisiana State University)
 Boston, Massachusetts (Harvard University)
 Guam I.
 Huancayo, Peru (Instituto Geofisico de Huancayo)
 Maui, Hawaii
 San Francisco, California (Stanford University)
 San Juan, Puerto Rico (University of Puerto Rico)
 Washington, D. C.
 White Sands, New Mexico

The tables and graphs of ionospheric data are correct for the values reported to the CRPL, but, because of variations in practice in the interpretation of records and scaling and manner of reporting of values, may at times give an erroneous conception of typical ionospheric characteristics at the station. Some of the errors are due to:

- a. Differences in scaling records when spread echoes are present.
- b. Omission of values when f_oF2 is less than or equal to f_oF1 , leading to erroneously high values of monthly averages or median values.
- c. Omission of values when critical frequencies are less than the lower frequency limit of the recorder, also leading to erroneously high values of monthly average or median values.

These effects were discussed on pages 6 and 7 of the previous F-series report IRPL-F5.

Ordinarily a blank space in the fEs column of a table is the result of the fact that a majority of the readings for the month are below the lower limit of the recorder or less than the corresponding values of f_oE . Blank spaces at the beginning and end of columns of $h'F1$, f_oF1 , $h'E$, and f_oE are usually the result of diurnal variation in these characteristics. Complete absence of medians of $h'F1$ and f_oF1 is usually the result of seasonal effects.

The dashed-line prediction curves of the graphs of ionospheric data are obtained from the predicted zero-muf contour charts of the CRPL-D series publications. The following points are worthy of note:

- a. Predictions for individual stations used to construct the charts may be more accurate than the values read from the charts since some smoothing of the contours is necessary to allow for the longitude effect within a zone. Thus, inasmuch as the predicted contours are for the center of each zone, part of the discrepancy between the predicted and observed values as given in the F series may be caused by the fact that the station is not centrally located within the zone.
- b. The final presentation of the predictions is dependent upon the latest available ionospheric and radio propagation data, as well as upon predicted sunspot number.
- c. There is no indication on the graphs of the relative reliability of the data; it is necessary to consult the tables for such information.

The following predicted smoothed 12-month running-average Zürich sunspot numbers were used in constructing the contour charts:

<u>Month</u>	<u>Predicted Sunspot No.</u>					
	1950	1949	1948	1947	1946	1945
December		108	114	126	85	38
November		112	115	124	83	36
October		114	116	119	81	23
September		115	117	121	79	22
August		111	123	122	77	20
July		108	125	116	73	
June		108	129	112	67	
May		108	130	109	67	
April		109	133	107	62	
March		111	133	105	51	
February	103	113	133	90	46	
January	105	112	130	88	42	

IONOSPHERIC DATA FOR EVERY DAY AND HOUR AT WASHINGTON, D. C.

The data given in tables 36 to 47 follow the scaling practices given in the report IRPL-C61, "Report of International Radio Propagation Conference," pages 36 to 39, and the median values are determined by the conventions given above under "Symbols and Terminology; Conventions for Determining Median Values." Beginning with September 1949, the data are taken at a new location, Ft. Belvoir, Virginia.

IONOSPHERE DISTURBANCES

Table 48 presents ionosphere character figures for Washington, D. C., during February 1950, as determined by the criteria presented in the report IRPL-R5, "Criteria for Ionospheric Storminess," together with Cheltenham, Maryland, geomagnetic K-figures, which are usually covariant with them.

Table 49 lists for the stations whose locations are given the sudden ionosphere disturbances observed on the continuous field intensity recordings made at Ft. Belvoir, Virginia, during February 1950.

Table 50 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Brentwood and Somerton, England, receiving stations of Cable and Wireless, Ltd., for January 20 and February 13, 1950.

Table 51 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Colombo, Ceylon, receiving station of Cable and Wireless, Ltd., for November 17 and 19, 1949.

Table 52 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Hong Kong, China, receiving station of Cable and Wireless, Ltd., for November 2, 1949.

Table 53 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Platanes, Argentina, receiving station of the International Telephone and Telegraph Corporation for January 20 and 22, 1950.

Table 54 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Point Reyes, California, receiving station of RCA Communications, Inc., for various days in February 1950.

Table 55 lists for the stations whose locations are given the sudden ionosphere disturbances observed at the Riverhead, New York, receiving station of RCA Communications, Inc., for February 13 and 20, 1950.

Table 56 lists for the stations whose locations are given the sudden ionosphere disturbances reported by the Institut für Ionosphärenforschung, as observed at Lindau, Harz, Germany, for various days in December 1949 and January 1950.

Table 57 gives provisional radio propagation quality figures for the North Atlantic and North Pacific areas, for 01 to 12 and 13 to 24 GCT, January 1950, compared with the CRPL daily radio disturbance warnings, which are primarily for the North Atlantic paths, the CRPL weekly radio propagation forecasts of probable disturbed periods, and the half-day Cheltenham, Maryland, geomagnetic K-figures.

The radio propagation quality figures are prepared from radio traffic and ionospheric data reported to the CRPL, in a manner basically the same as that described in IRPL-R31, "North Atlantic Radio Propagation Disturbances, October 1943 through October 1945," issued February 1, 1946. The scale conversions for each report are revised for use with the data beginning January 1948, and statistical weighting replaces what was, in effect, subjective weighting. Separate master distribution curves of the type described in IRPL-R31 were derived for the part of 1946 covered by each report; data received only since 1946 are compared with the master curve for the period of the available data. A report whose distribution is the same as the master is thereby converted linearly to the Q-figure scale. Each report is given a statistical weight which is the reciprocal of the departure from linearity. The half-daily radio propagation quality figure, beginning January 1948, is the weighted mean of the reports received for that period.

These radio propagation quality figures give a consensus of opinion of actual radio propagation conditions as reported by the half day over the two general areas. It should be borne in mind, however, that though the quality may be disturbed according to the CRPL scale, the cause of the disturbance is not necessarily known. There are many variables that must be considered. In addition to ionospheric storminess itself as the cause, conditions may be reported as disturbed because of seasonal characteristics such as are particularly evident in the pronounced day and night contrast over North Pacific paths during the winter months, or because of improper frequency usage for the path and time of day in question. Insofar as possible, frequency usage is included in rating the reports. Where the actual frequency is not shown in the report to the CRPL, it has been assumed that the report is made on the use of optimum working frequencies for the path and time of day in question. Since there is a possibility that all the disturbance shown by the quality figures is not due to ionospheric storminess alone, care should be taken in using the quality figures in research correlations with solar, auroral, geomagnetic, or other data. Nevertheless, these quality figures do reflect a consensus of opinion of actual radio propagation conditions as found on any one half day in either of the two general areas.

SOLAR CORONAL INTENSITIES OBSERVED AT CLIMAX, COLORADO

In tables 58a and 58b are listed the intensities of the green (5303A) line of the emission spectrum of the solar corona as observed during February 1950 by the High Altitude Observatory of Harvard University and the University of Colorado at Climax, Colorado, for east and west limbs, respectively, at 5-degree intervals of position angle north and south of the solar equator at the limb. Beginning January 11, 1949, the actual measurements are on solar rotation coordinates rather than astronomical coordinates; thus values of the

correction P given in previous coronal tables are omitted. The time of observation is given to the nearest tenth of a day, GCT. The tables of coronal observations in CRPL-F29 to F41 listed the data on astronomical coordinates; the present format on solar rotation coordinates is in conformity with the tables of CRPL-1-4, "Observations of the Solar Corona at Climax, 1944-46."

Tables 59a and 59b give similarly the intensities of the first red (6374A) coronal line; tables 60a and 60b list the intensities of the second red (6704A) coronal line. The following symbols are used in tables 58, 59, and 60: a, observation of low weight; -, corona not visible; and X, position angle not included in plate estimates.

AMERICAN AND ZURICH PROVISIONAL RELATIVE SUNSPOT NUMBERS

Table 61 presents the daily American relative sunspot number, R_A , computed from observations communicated to CRPL by observers in America and abroad. Beginning with the observations for January 1948, a new method of reduction of observations is employed such that each observer is assigned a scale-determining "observatory coefficient," ultimately referred to Zürich observations in a standard period, December 1944 to September 1945, and a statistical weight, the reciprocal of the variance of the observatory coefficient. The daily numbers listed in the table are the weighted means of all observations received for each day. Details of the procedure are given in the Publication of the Astronomical Society of the Pacific, issued February 1949, in an article entitled "Reduction of Sunspot-Number Observations." The American relative sunspot number computed in this way is designated R_A . It is noted that a number of observatories abroad, including the Zürich observatory, are included in R_A . The scale of R_A was referred specifically to that of the Zürich relative sunspot numbers in the standard comparison period; since that time, R_A is influenced by the Zürich observations only in that Zürich proves to be a consistent observer and receives a high statistical weight. In addition, this table lists the daily provisional Zürich sunspot numbers, R_Z .

PRELIMINARY MEAN K-INDICES, PRELIMINARY INTERNATIONAL CHARACTER FIGURES, MAGNETICALLY SELECTED DAYS, PLANETARY INDICES

Table 62 gives preliminary mean K-indices, K_w , and international character figures, C, K_p , and also final magnetically selected days from magnetic observatories widely distributed over the Earth's surface. The selected days are preferentially derived using the four magnetic criteria: C-figures, sums of the eight daily mean K-indices, the greatest daily K-index, and the sums of the squares of the eight daily K-indices.

Table 63 gives geomagnetic planetary three-hour-range indices, Kp, for 1940 and 1949. It should be noted that Kp is without reduction because of the (rare) solar flare effects. Kp is designed to measure solar particle-radiation by its magnetic effects at eleven observatories between geomagnetic latitudes 47 and 63 degrees. Complete description of Kp has appeared in Bulletin 12b, "Geomagnetic Indices C and K, 1948" published in Washington, D. C., 1949, by the Association of Terrestrial Magnetism and Electricity, International Union of Geodesy and Geophysics. This bulletin has tables of Kp for 1945-48. Current tables of Kp appear in the Journal of Geophysical Research.

These tables have been furnished by the courtesy of the Committee on Characteristics of Magnetic Disturbance, ATME, IUGG. The majority of the world's magnetic observatories have cooperated in supplying the data. The Meteorological Office, De Bilt, Holland, has efficiently assembled and compiled the summary tables. The Chairman of the Committee has compiled Kp to supply the need of research workers in the ionospheric field for a specific index of solar particle-activity. Tables of Kp will ultimately be available from January 1, 1937, the beginning date for serious ionospheric records.

ERRATA

1. CRPL-F66, p: 10, Erratum 2: Item (a) should read "CRPL-F65, p. 7, par. 4." Item (b) should read "CRPL-F65."
2. CRPL-F66, p 15, table 26: Sweep for July 19 through 30 should read "1.5 Mc to 16.0 Mc in 1 minute 30 seconds."
3. CRPL-F66, p. 11, table 1: Sweep should carry the additional information that as of 1130, January 6, 1950, the time of sweep of the recorder was changed from 15 seconds to 30 seconds.

TABLES OF IONOSPHERIC DATA

Table 1

Washington, D. C. (38.7°N, 77.1°W) February 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	(4.3)						(2.9)
01	280	4.4						2.9
02	280	4.4						2.8
03	270	4.2						2.8
04	270	4.3						2.9
05	260	4.0						2.9
06	250	3.8						3.0
07	230	5.1			---	---		3.2
08	220	7.6			110	2.4		3.4
09	210	8.8	---	---	(100)	2.8		3.3
10	220	9.8	---	---	(100)	3.2		3.2
11	210	10.2	---	---	(100)	3.3		3.1
12	220	10.9	210	---	100	3.4		3.1
13	230	11.2	210	---	100	3.4		3.0
14	220	11.0	---	---	100	3.3		3.0
15	220	11.3	---	---	100	3.1		3.0
16	230	(11.2)	---	---	110	2.8		(3.1)
17	220	(10.4)	---	---	110	2.2		(3.1)
18	210	(9.4)						(3.1)
19	220	(7.8)						(3.1)
20	230	(6.6)						(3.0)
21	230	(5.6)						(3.0)
22	250	(5.0)						(2.9)
23	260	(4.4)						(2.9)

Time: 75.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 30 seconds.

Table 2

Oslo, Norway (60.0°N, 11.0°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(355)	2.0						(2.8)
01	350	2.0						(2.8)
02	350	1.9						(2.6)
03	350	1.8						(2.6)
04	320	2.0					1.6	(2.6)
05	320	2.1						(2.7)
06	295	2.0						(2.8)
07	290	2.3						(2.9)
08	260	(2.8)			---	---		(2.9)
09	230	5.3			---	1.8	2.8	3.1
10	225	7.9			125	2.2	2.6	3.3
11	225	9.2	---	---	130	2.2	2.0	(3.2)
12	220	(9.9)	---	---	120	2.3	2.3	(3.2)
13	225	10.5	---	---	120	2.4	2.3	3.2
14	225	10.2	---	---	130	2.2	2.4	3.2
15	220	9.5			130	2.0	2.1	3.3
16	215	8.4			155	1.7	1.6	3.2
17	215	7.0						(3.2)
18	220	(5.4)						(3.2)
19	240	4.0						(3.0)
20	255	3.0						(2.9)
21	280	(2.7)						(2.8)
22	(300)	(2.3)						(2.8)
23	(335)	(2.0)						(2.7)

Time: 15.0°E.

Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation;
experimental recorder, 1.3 Mc to 14.0 Mc in 8 minutes.

Table 3

Boston, Massachusetts (42.4°N, 71.3°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.4						2.6
01	290	4.1						2.6
02	275	4.4						2.7
03	260	4.1						2.7
04	260	4.0						2.7
05	260	3.7						2.7
06	270	3.6						2.7
07	250	4.7						3.0
08	230	(7.2)			---	---		3.1
09	230	9.6			---	---		3.1
10	240	10.9			---	---		3.0
11	240	11.1			---	---		3.0
12	240	11.7			---	---		3.0
13	240	11.6			---	---		(3.0)
14	240	11.6			---	---		3.0
15	235	11.0			---	---		3.0
16	230	10.4			---	---		3.0
17	230	10.0			---	---		(2.9)
18	(240)	(8.6)						(3.0)
19	230	7.0						3.0
20	240	5.6						2.9
21	250	4.9						2.8
22	260	4.7						2.7
23	270	4.3						2.6

Time: 75.0°W.

Sweep: 0.8 Mc to 14.0 Mc in 1 minute.

Table 4

San Francisco, California (37.4°N, 122.2°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.0						2.8
01	280	2.9						2.8
02	300	2.8						2.8
03	300	2.8						2.8
04	300	2.9						2.7
05	300	2.8						2.7
06	300	3.0						2.8
07	260	3.9						3.0
08	230	7.2			120	2.2	2.9	3.4
09	230	9.0	---	---	120	2.8	4.0	3.4
10	240	10.4	220	---	120	3.1	3.8	3.3
11	240	11.0	220	---	120	3.4	4.0	3.3
12	240	11.0	220	---	120	3.5	4.2	3.2
13	(240)	10.9	220	---	120	3.5	4.0	3.1
14	240	10.6	230	---	120	3.5	3.9	3.2
15	240	10.5	---	---	120	3.9		3.2
16	230	10.0			120	2.6		3.2
17	230	8.6			140	1.9		3.3
18	220	7.3					2.4	3.2
19	230	5.4					2.7	3.2
20	240	3.7					2.5	3.2
21	250	2.8					2.8	3.0
22	290	2.6					2.7	2.8
23	300	2.9					2.7	2.7

Time: 120.0°W.

Sweep: 1.3 Mc to 18.0 Mc in 4 minutes.

Table 5

White Sands, New Mexico (32.3°N, 106.5°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	3.3					2.3	2.7
01	280	3.3					2.3	2.8
02	260	3.4					2.3	2.8
03	260	3.1					2.3	2.8
04	260	3.0					2.4	2.8
05	300	3.0					2.3	2.7
06	280	3.0					2.3	2.7
07	240	5.1					2.5	3.0
08	230	7.9			120	2.4		3.3
09	230	9.2	---	---	120	2.9	4.4	3.3
10	230	10.0	---	---	110	3.3	4.2	3.1
11	230	10.8	220	---	110	3.5	4.8	3.0
12	230	10.9	220	---	110	3.8	4.4	3.0
13	240	10.8	220	---	110	3.5	4.8	2.9
14	240	10.7	220	---	110	(3.4)	5.0	2.9
15	240	10.2	---	---	110	3.1	4.7	3.0
16	230	9.9	---	---	120	2.7	3.8	3.0
17	230	9.2			(120)	2.0	2.8	3.1
18	220	7.5					2.4	3.1
19	220	5.7					2.3	3.1
20	230	4.2					2.5	3.1
21	250	3.5					2.3	3.0
22	280	3.0					2.4	2.8
23	280	3.1					2.4	2.7

Time: 105.0°W.

Sweep: 0.8 Mc to 14.0 Mc in 2 minutes.

Table 6

Baton Rouge, Louisiana (30.5°N, 91.2°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	330	3.9						2.7
01	310	4.0						2.8
02	300	4.0						2.9
03	300	3.7						2.9
04	300	3.6						2.8
05	350	3.4						2.7
06	350	3.5						2.7
07	290	5.4						3.0
08	260	8.2	240	---	---	2.6		3.1
09	270	8.6	260	---	120	3.0		3.0
10	280	9.8	260	---	120	3.4		3.1
11	280	10.2	260	---	120	3.5		2.9
12	300	11.0	260	---	120	3.6		2.9
13	(300)	10.8	260	---	120	3.5		2.8
14	290	10.7	260	---	120	3.5		2.8
15	(280)	10.7	270	---	120	3.2		2.8
16	(280)	10.5	270	---	120	2.8		2.9
17	260	10.0	---	---	---			3.0
18	240	8.0						3.0
19	260	6.0						2.9
20	270	4.7						3.0
21	300	4.2						2.8
22	310	3.7						2.8
23	340	3.7						3.7

Time: 80.0°W.

Sweep: 2.12 Mc to 14.1 Mc in 5 minutes; automatic operation.

Table 7

Okinaua 1. (26.3°N, 127.7°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	250	5.0						3.0
01	250	5.0						3.0
02	250	5.0						3.0
03	250	4.0						3.0
04	250	3.6						3.1
05	250	3.0						3.0
06	280	3.0						3.0
07	290	5.0						3.0
08	250	11.0			4.5			3.0
09	250	15.0			9.0	2.6		3.0
10	250	15.0			13.0	---		3.0
11	250	15.0			---	---		2.9
12	280	18.0			---	---		2.9
13	300	(16.0)			---	---		(2.9)
14	280	17.0			---	---		3.0
15	260	17.0			---	---		2.9
16	260	17.0			---	---		3.0
17	240	17.0			---	---		3.0
18	210	15.0			---	---		3.0
19	210	15.0			---	---		3.0
20	200	12.0			---	---		3.0
21	210	11.0			---	---		3.0
22	210	8.0			---	---		3.0
23	240	7.0			---	---		3.0

Time: 135.0°E.

Sweep: 1.0 Mc to 26.0 Mc in 1 minute.

Table 8

Maui, Hawaii. (20.8°N, 156.5°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	4.7						2.6
01	280	5.2						2.8
02	260	4.9						3.0
03	240	4.1						3.1
04	280	2.6						2.8
05	320	(2.5)						(2.5)
06	330	(2.4)						2.7
07	300	4.9						2.5
08	270	9.0	270	---	160	1.8		3.1
09	280	11.7	280	---	130	2.6		3.1
10	280	12.4	240	(4.9)	120	3.0		4.7
11	300	12.5	230	(4.9)	120	3.4		4.6
12	340	12.9	230	(5.3)	120	3.5		4.6
13	340	14.0	230	(5.6)	120	3.7		4.4
14	320	14.3	250	(5.7)	120	3.6		4.6
15	300	14.0	250	5.7	120	3.4		4.6
16	280	12.7	260	---	120	3.0		4.8
17	260	12.4	---	---	120	2.6		4.8
18	240	10.8						4.8
19	230	7.8						4.7
20	240	6.6						4.3
21	250	7.0						2.5
22	250	7.0						2.2
23	250	5.4						1.9

Time: 150.0°W.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 9

San Juan, Puerto Rico (18.4°N, 66.1°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	(280)	5.4						2.7
01	(260)	6.3						2.8
02	(250)	5.2						2.9
03	---	4.7						2.9
04	---	4.0						2.8
05	---	4.2						2.7
06	---	4.1						2.9
07	260	6.4						3.0
08	250	9.0			3.6			3.0
09	260	11.2			(5.2)	3.3		3.0
10	260	11.9			6.2	3.6		3.0
11	260	10.7			5.8	3.7		3.0
12	280	10.3			5.5	3.9	5.5	2.9
13	300	11.0			---	3.7	(5.6)	2.8
14	290	11.0			5.0	3.7		2.8
15	280	10.9			---	3.6		2.6
16	270	10.5			---	3.2		2.8
17	260	10.7			---	---		2.8
18	240	10.1						3.0
19	240	(8.2)						(2.9)
20	260	6.6						2.8
21	280	5.4						2.7
22	280	6.2						2.7
23	280	5.5						2.8

Time: 60.0°E.

Sweep: 2.9 Mc to 13.0 Mc in 9 minutes, automatic operation; supplemented by manual operation.

Table 10

Guam 1. (13.6°N, 144.9°E) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	230	8.5					3.5	3.0
01	230	8.0					3.3	3.1
02	230	7.4						3.3
03	220	5.7						3.2
04	230	4.3					2.3	3.1
05	240	3.8					2.9	3.0
06	240	3.5					3.0	3.2
07	260	6.2			130	1.8	3.7	3.2
08	240	9.2			110	2.8	5.4	3.0
09	260	11.6	230	---	110	3.2	5.4	2.8
10	270	11.7	210	(4.9)	100	3.5	5.9	2.6
11	270	10.6	200	4.8	100	3.7	5.7	2.5
12	270	10.2	200	4.9	100	3.8	5.2	2.4
13	270	10.4	200	4.7	110	3.8	5.0	2.4
14	270	11.0	200	---	100	3.6	4.7	2.4
15	250	11.5	220	---	110	3.5	4.8	2.6
16	240	12.1	230	---	100	3.2	4.4	2.6
17	250	12.4			110	2.8	4.2	2.7
18	250	(12.7)			---	---	4.4	(2.8)
19	270	12.2					3.2	2.7
20	260	(11.4)					2.9	2.7
21	250	(11.3)					3.0	(2.8)
22	240	(10.0)					3.5	(3.0)
23	230	9.0					3.5	3.0

Time: 150.0°E.

Sweep: 1.0 Mc to 25.0 Mc in 15 seconds.

Table 11

Huancayo, Peru (12.0°S, 75.3°W) January 1950

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	9.4					5.0	2.8
01	280	8.0					4.8	2.9
02	260	7.0					5.2	3.0
03	250	6.2					6.2	3.0
04	240	5.4					4.5	3.1
05	250	4.6					2.6	3.1
06	260	7.2			100	2.0	4.8	3.0
07	240	10.0			100	2.8	5.2	3.0
08	230	11.7	220	(5.2)	100	3.3	6.8	2.9
09	300	12.2	220	5.3	100	3.7	11.4	2.8
10	300	12.4	210	5.4	100	4.0	12.6	2.4
11	310	12.3	210	5.4	100	4.2	12.8	2.2
12	310	11.8	200	5.4	100	4.2	12.8	2.2
13	300	11.3	200	5.3	100	4.1	12.6	2.2
14	300	11.3	200	5.1	100	3.9	12.6	2.2
15	210	11.5	200	(4.9)	100	3.6	11.9	2.3
16	220	11.6	---	---	100	3.2	10.9	2.3
17	250	11.9			100	2.9	8.4	2.2
18	290	11.7			100	2.0	3.6	2.3
19	320	11.5						2.2
20	390	10.8						2.1
21	380	10.4					2.7	2.2
22	340	(10.1)					2.8	2.4
23	320	(10.0)					5.3	2.7

Time: 75.0°W.

Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 12

Lindau/Hars, Germany (51.6°N, 10.1°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	3.2					2.2	
01	310	3.2						
02	310	3.2						
03	300	3.1						
04	290	3.1						
05	280	3.2						2.0
06	240	2.8						2.0
07	250	2.8						2.8
08	220	5.7			---	---	2.8	
09	210	9.0			115	1.8	3.4	
10	210	11.2			110	2.4	3.6	
11	210	11.6			105	2.6	3.6	
12	210	12.1			110	2.7	3.5	
13	210	11.8			110	2.7	3.5	
14	210	11.6			110	2.4	3.4	
15	210	10.9			110	3.1	3.4	
16	210	9.9			---	---	3.2	
17	300	8.2					2.8	
18	210	6.0					2.8	
19	210	4.7					2.6	
20	240	4.0					2.6	
21	250	3.5					2.8	
22	290	3.2					2.5	
23	300	3.1					2.4	

Time: 15.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 8 minutes.

Table 13

Johannesburg, Union of S. Africa (26.2°S, 28.0°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	7.2					2.2	2.8
01	270	6.8					2.1	2.8
02	260	6.4					1.8	2.8
03	260	5.8					1.4	2.8
04	270	5.1						2.8
05	270	5.3				1.6		2.8
06	240	7.1	---	---	110	2.5		3.0
07	270	8.2	230	---	110	3.1	3.2	2.8
08	300	9.5	220	5.2	110	3.5		2.6
09	340	10.5	220	5.6	110	3.8	4.3	2.6
10	340	10.8	210	5.6	110	4.0	4.2	2.6
11	360	11.1	210	5.8	110	(4.1)	4.6	2.6
12	370	11.5	210	5.8	110	4.1	4.4	2.6
13	360	11.7	210	5.6	110	(4.1)	4.4	2.6
14	360	11.5	210	5.6	110	(4.0)	4.6	2.6
15	350	10.8	220	5.4	110	3.9	4.3	2.6
16	340	10.3	220	5.4	110	3.6	3.7	2.6
17	320	9.8	230	4.8	110	3.1	3.6	2.7
18	270	9.4	260	---	110	2.5	3.0	2.7
19	270	9.6			---	---	2.4	2.8
20	260	9.3					2.8	2.8
21	260	8.9					2.5	2.8
22	260	8.4					2.0	2.8
23	270	7.6					1.6	2.8

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 14

Watheroo, W. Australia (30.3°S, 115.9°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	7.2					3.8	2.8
01	300	6.8					5.4	2.6
02	300	6.6					4.8	2.6
03	290	6.5					3.6	2.7
04	270	5.7					3.0	2.7
05	270	5.7					1.7	3.2
06	240	6.8					2.5	3.2
07	260	7.6	230	5.0			3.0	3.3
08	240	8.2	230	5.2			3.3	4.3
09	350	8.6	230	5.3			3.8	5.2
10	370	9.2	220	5.5			3.8	4.8
11	370	9.2	220	5.5			3.8	5.2
12	370	9.5	220	5.6			3.8	5.2
13	350	9.6	230	5.6			3.9	5.1
14	360	9.6	230	5.6			3.9	5.4
15	360	9.1	230	5.5			3.7	5.5
16	350	8.6	240	5.4			3.5	5.3
17	330	8.4	240	5.0			3.1	4.8
18	300	8.3	260	4.4			2.6	3.4
19	270	8.2						3.2
20	270	8.3						3.6
21	290	8.1						3.4
22	290	7.9						3.7
23	290	7.5						3.5

Time: 120.0°E.

Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 15

Capetown, Union of S. Africa (34.2°S, 18.3°E) December 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	290	6.2					2.7	2.7
01	290	6.1					3.1	2.6
02	290	5.9					2.7	2.7
03	280	5.5					2.7	2.7
04	280	5.1					2.2	2.7
05	300	5.0					2.0	2.7
06	260	6.4			120	2.1	2.9	2.8
07	260	7.6	250	---	120	2.8	3.2	2.8
08	330	8.8	240	5.0	110	3.2	3.6	2.6
09	360	9.7	230	5.3	110	3.6	4.0	2.6
10	380	10.2	220	5.6	110	(3.8)	4.2	2.6
11	380	10.5	220	5.6	110	---	4.4	2.5
12	380	11.0	(210)	5.7	110	---	4.4	2.5
13	380	11.0	220	5.7	110	---	4.5	2.5
14	380	11.0	220	5.7	110	---	4.2	2.6
15	370	10.6	220	5.6	110	---	4.2	2.6
16	370	10.0	230	5.4	110	3.7	4.0	2.6
17	340	9.6	230	5.0	110	3.5	3.7	2.6
18	310	9.1	240	---	110	2.9	3.6	2.7
19	270	8.9	260	---	120	2.3	3.1	2.8
20	260	8.9			---	(1.6)	2.5	2.9
21	250	7.8					2.9	2.8
22	260	6.9					2.3	2.8
23	280	6.5					2.1	2.7

Time: 30.0°E.

Sweep: 1.0 Mc to 15.0 Mc in 7 seconds.

Table 16

De Bilt, Holland (52.8°N, 6.7°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01	360	3.7					2.0	2.3
02								
03	320	3.3					3.2	(2.4)
04								
05	290	3.0					2.2	(3.7)
06								
07	240	6.3			180	1.9	1.9	2.9
08								
09	230	11.0	---	---	110	2.6	2.8	3.0
10								
11	240	12.8	230	3.8	120	3.0	2.8	2.9
12								
13	245	12.7	---	---	120	2.8	2.5	2.9
14								
15	240	11.5	---	---	130	2.1	2.7	(3.0)
16								
17	220	9.0					2.2	2.9
18								
19	240	5.4						2.8
20								
21	300	4.2						2.5
22								
23	320	4.0						2.4

Time: 0.0°.

Sweep: 1.4 Mc to 16.0 Mc in 7 minutes, automatic operation.

Table 17

Brisbane, Australia (27.5°S, 153.0°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	9.0					3.6	2.8
01	280	8.0					3.9	2.7
02	280	7.8					4.0	2.6
03	290	7.5					3.0	2.6
04	290	7.2					2.7	2.6
05	260	7.4	---	---	140	2.0	2.0	2.8
06	240	8.1	---	---	110	2.8		2.9
07	280	9.0	240	5.0	110	3.2		2.8
08	300	9.5	240	5.5	100	3.6		2.7
09	340	10.1	210	6.0	100	3.8		2.7
10	340	11.0	240	6.0	100	3.9	4.0	2.7
11	350	11.1	210	6.5	110	3.9	4.4	2.7
12	350	11.5	210	6.0	110	4.0		2.6
13	350	11.0	240	6.1	110	4.0		2.7
14	340	11.0	250	6.0	110	3.9		2.7
15	340	10.5	240	5.7	110	3.7		2.7
16	300	9.6	240	5.0	110	3.4		2.7
17	270	9.3	250	4.8	110	2.9		2.7
18	280	9.0			---	---	4.6	2.7
19	300	9.0					4.0	2.6
20	320	9.0					3.2	2.6
21	320	9.0					3.0	2.6
22	300	9.5					3.8	2.7
23	300	9.2					4.2	2.8

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 18

Watheroo, W. Australia (30.3°S, 115.9°E) November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	7.0					3.6	2.6
01	290	6.7					3.7	2.8
02	290	8.2					3.2	2.8
03	300	5.9					3.1	2.6
04	300	5.8					3.0	2.6
05	300	6.0					2.6	2.3
06	280	7.0	260	4.0			2.4	2.9
07	290	7.4	260	4.8			3.0	3.4
08	320	8.4	240	4.9			3.4	4.0
09	300	9.1	250	5.0			3.7	4.5
10	310	10.2	240	5.2			3.9	4.6
11	310	10.5	230	5.3			3.9	4.8
12	320	10.6	230	5.4			4.0	4.6
13	300	10.6	240	5.1			3.9	4.5
14	320	10.7	240	5.1			3.9	4.3
15	320	10.4	240	4.9			3.6	4.2
16	300	9.7	250	4.8			3.3	4.0
17	300	9.3	260	4.6			2.9	3.4
18	280	9.3					2.1	2.8
19	270	9.2						2.4
20	270	8.3						2.8
21	300	7.9						3.0
22	300	7.6						3.2
23	300	7.5						3.3

Time: 120.0°E.

Sweep: 16.0 Mc to 0.5 Mc in 15 minutes, automatic operation.

Table 19

Canberra, Australia (35.3°S, 149.0°E)

November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	270	8.4					3.1	2.7
01	260	7.7					3.1	2.6
02	270	7.0					3.4	2.6
03	280	5.7					2.5	2.5
04	280	5.2					2.5	2.6
05	270	6.5	---	---	100	1.8	2.6	2.7
06	250	7.1	240	4.2	100	2.5	3.5	2.9
07	300	7.5	230	4.8	100	3.2	4.0	2.8
08	340	7.9	235	5.4	100	3.5	5.0	2.7
09	350	8.5	(240)	5.5	100	3.8	5.8	2.7
10	350	9.2	230	5.9	100	3.9	5.0	2.6
11	360	9.5	220	5.9	100	3.9	4.8	2.8
12	360	9.7	210	5.0	100	3.9	4.3	2.8
13	360	9.9	220	5.9	100	3.9	4.8	2.8
14	355	9.9	230	5.9	100	3.9	4.2	2.8
15	340	9.5	230	5.6	100	3.7	4.0	2.6
16	320	9.2	230	5.3	100	3.5	3.0	2.7
17	300	9.0	240	4.5	100	3.0	3.4	2.7
18	260	8.5	255	(3.8)	110	2.3	3.8	2.7
19	260	8.5			---	1.5	3.4	2.6
20	290	8.5					3.5	2.5
21	300	8.5					4.0	2.8
22	300	8.5					3.9	2.6
23	295	8.5					3.8	2.6

Time: 150.0°E.

Sweep: 1.0 Mc to 18.0 Mc in 1 minute 55 seconds.

Table 20

Hobart, Tasmania (42.8°S, 147.4°E)

November 1949

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	280	5.8						2.5
01	290	6.3					2.0	2.8
02	290	5.6					2.5	2.5
03	300	5.4					2.8	2.6
04	300	5.0					3.5	2.6
05	270	5.3	---	---	---	1	2.5	2.7
06	250	6.0	250	3.8	100	2.6	3.6	2.9
07	300	5.5	240	4.5	100	3.1	3.8	2.8
08	380	7.0	240	5.0	95	3.2		2.7
09	400	7.3	230	5.4	100	3.6	3.4	2.7
10	420	7.5	225	5.5	100	3.8		2.5
11	410	7.5	220	5.5	100	3.8	3.5	2.8
12	430	7.8	220	5.5	100	3.9	3.8	2.8
13	400	8.0	210	5.8	100	3.8	3.8	2.6
14	390	8.0	220	5.5	100	3.8	3.2	2.8
15	380	8.1	220	5.5	100	3.6	3.8	2.8
16	360	8.0	230	5.3	100	3.4	3.8	2.6
17	300	8.0	240	4.6	100	3.0	3.0	2.7
18	250	8.2	---	---	---	2.4	2.1	2.7
19	280	8.4			---	1	3.0	2.8
20	260	8.0					3.3	2.7
21	270	7.7					3.5	2.8
22	280	7.5					3.0	2.8
23	290	7.4					2.2	2.6

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 21

Delhi, India (28.6°N, 77.1°E)

October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	7.6						2.9
01	360	7.0						
02	---	---						
03	---	---						
04	---	(5.2)						3.3
05	340	5.2						
06	300	7.2						
07	300	9.9						
08	280	11.8						3.1
09	310	12.8						
10	320	12.9						
11	380	13.7						
12	340	13.8						2.7
13	(360)	(14.0)						
14	(360)	(14.2)						
15	---	(14.2)						
16	(300)	(14.0)						2.9
17	(300)	(13.8)						
18	(310)	(13.0)						
19	(320)	(12.0)						
20	(330)	(11.4)						3.1
21	340	9.8						
22	320	9.0						3.0
23	340	8.2						

Time: Local.

Sweep: 1.8 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

**Average values; other columns, median values.

Table 22

Bombay, India (19.0°N, 73.0°E)

October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06								
07	360	7.9						
08	(480)	(10.3)						2.5
09	450	9.8						
10	490	10.8						
11	510	11.8						
12	540	(12.7)						2.4
13	---	---						
14	---	(13.7)						
15	---	(13.8)						
16	---	(13.5)						
17	---	(12.4)						
18	---	(12.9)						
19	510	12.6						
20	480	12.2						2.5
21	450	10.8						
22	420	9.6						2.6
23	380	9.3						

Time: Local.

Sweep: 1.8 Mc to 18.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

**Average values; other columns, median values.

Table 23

Madras, India (13.0°N, 80.2°E)

October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								2.8
05								
06								
07	360	10.5						
08	420	11.8						2.6
09	420	13.0						
10	480	13.8						
11	540	13.8						
12	540	13.8						
13	600	13.8						
14	600	(13.9)						
15	600	(13.9)						
16	(570)	(14.0)						2.2
17	580	(13.9)						
18	570	13.8						
19	580	(13.6)						
20	(540)	(13.5)						2.1
21	(540)	(13.4)						
22	(540)	(13.2)						
23								

Time: Local.

Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

**Average values; other columns, median values.

Table 24

Tiruchy, India (10.8°N, 78.8°E)

October 1949

Time	*	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00								
01								
02								
03								
04								
05								
06	---	---						
07	360	10.1						
08	420	12.0						
09	440	12.4						
10	480	12.4						
11	540	12.2						
12	540	12.0						
13	540	12.2						
14	570	12.4						
15	(600)	(12.7)						
16	600	12.5						
17	540	12.8						
18	600	12.0						
19	600	11.3						
20	620	11.2						
21	520	11.1						
22	480	10.9						
23								

Time: Local.

Sweep: 1.8 Mc to 16.0 Mc in 5 minutes, manual operation.

*Height at 0.83 foF2.

Table 25

Drisbane, Australia (27.5°S, 153.0°E)									
October 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	280	8.0					3.2	2.7	
01	270	8.0					2.6	2.7	
02	270	7.5					2.4	2.6	
03	300	7.0					2.0	2.6	
04	300	6.5						2.6	
05	290	7.1			160	1.4		2.7	
06	250	8.6	---	---	110	2.5		3.0	
07	250	10.5	240	4.5	110	3.0		3.0	
08	250	11.1	230	4.7	110	3.5		3.0	
09	260	11.0	220	5.0	100	3.7		2.8	
10	280	11.5	220	5.5	100	3.8		2.8	
11	300	12.0	200	5.9	100	3.9		2.8	
12	300	11.9	220	5.5	110	4.0	3.6	2.8	
13	320	11.6	220	6.0	110	4.0		2.7	
14	300	11.0	230	5.6	110	3.8		2.7	
15	300	11.0	230	5.0	110	3.6		2.7	
16	250	10.5	240	5.0	110	3.2		2.8	
17	250	10.0	---	---	120	2.6		2.8	
18	260	10.0			---		3.4	2.8	
19	270	9.4					3.0	2.7	
20	300	9.0					2.6	2.7	
21	300	9.0					3.0	2.7	
22	290	9.0					3.2	2.8	
23	290	8.6					2.6	2.7	

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 26

Canberra, Australia (35.3°S, 149.0°E)									
October 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	290	7.5						2.3	2.6
01	270	7.0						2.0	2.6
02	260	6.5						2.3	2.6
03	280	6.3						2.0	2.5
04	280	6.0						2.0	2.5
05	280	5.9							2.7
06	250	7.0	250	(3.9)	110	2.3		3.2	3.0
07	250	7.9	230	4.5	100	2.9		3.5	3.0
08	255	8.8	220	4.7	100	3.3		3.5	3.0
09	290	9.9	210	5.0	100	3.5		4.0	2.9
10	290	10.5	205	5.2	100	3.7		3.9	2.9
11	310	10.8	210	5.5	100	3.8		3.5	2.8
12	330	10.6	200	5.4	100	3.8		4.0	2.7
13	320	10.5	210	5.6	100	3.9			2.7
14	300	10.4	215	5.5	100	3.8		3.2	2.7
15	290	10.0	225	5.0	100	3.5		3.1	2.8
16	280	9.8	225	4.7	100	3.2		3.1	2.8
17	250	9.5	250	(4.2)	100	2.8		2.8	2.8
18	250	9.5	---	---	125	2.0		2.6	2.8
19	250	9.0						2.8	2.7
20	260	8.5						2.8	2.7
21	275	8.4						2.7	2.7
22	280	8.0						2.6	2.6
23	290	7.9						2.6	2.6

Time: 150.0°E.

Sweep: 1.0 Mc to 16.0 Mc in 1 minute 55 seconds.

Table 27

Mebart, Tasmania (42.8°S, 147.4°E)									
October 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	280	6.4					2.2	2.6	
01	280	6.0					2.4	2.6	
02	270	5.6					2.3	2.6	
03	280	5.1					3.0	2.6	
04	290	4.7					2.4	2.6	
05	290	4.8					2.2	2.8	
06	250	5.7	---	---	110	2.3	2.7	2.9	
07	250	6.5	240	4.2	100	2.8	3.2	3.0	
08	280	7.1	230	4.6	100	3.2	4.0	3.0	
09	320	7.7	220	5.0	100	3.4	3.6	2.8	
10	300	8.4	220	5.0	100	3.7	3.9	2.9	
11	300	8.8	220	5.1	---	3.8	3.9	2.8	
12	330	8.6	210	5.2	100	3.8	3.8	2.8	
13	320	9.2	210	5.4	100	3.8	3.8	2.7	
14	320	9.0	220	5.4	100	3.6	3.5	2.7	
15	300	8.9	220	5.0	100	3.4	3.5	2.8	
16	250	9.0	230	4.5	95	3.2	3.0	2.8	
17	250	8.9	250	4.0	100	2.7	2.5	2.8	
18	250	9.0			120	2.1	2.1	2.8	
19	250	9.0					1.5	2.8	
20	250	8.3						2.7	
21	250	7.7					2.0	2.6	
22	270	6.7						2.6	
23	280	6.6					1.4	2.5	

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

Table 28

Calcutta, India (22.6°N, 88.4°E)									
September 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	(210)	8.2					---		3.1
01		(8.0)							
02		(7.8)							
03	(210)	(6.4)							(3.1)
04		(5.5)					---		
05		(5.0)					---		
06	(240)	(6.6)					1.8		(3.1)
07		(8.7)					2.4		
08		(10.0)					3.2		
09	270	10.5					3.4		2.8
10		11.2					3.9	(4.7)	
11		11.0					4.0		
12	---	---					---		---
13		(10.8)					---		
14		(11.0)					---		
15	---	(11.2)					---		(2.6)
16		10.2					3.8		
17		10.0					3.3	(5.0)	
18	240	10.0					3.0	(4.6)	2.8
19		(9.9)					2.0	(4.0)	
20		(9.8)					2.0		
21	(240)	(9.3)					---		(3.9)
22		8.9					1.7		
23		8.6					1.2		

Time: Local.

Table 29*

Mebart, Tasmania (42.8°S, 147.4°E)									
September 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	250	6.2					2.1	2.7	
01	260	5.6					2.3	2.7	
02	250	5.6					3.0	2.7	
03	250	5.0					2.8	2.8	
04	250	4.6					2.8	2.7	
05	260	3.8					2.6	2.8	
06	260	4.6					2.5	3.0	
07	240	6.7			100	2.3	3.6	3.2	
08	240	8.3	230	---	100	2.8	3.5	3.2	
09	250	(9.0)	220	4.5	100	3.2	3.6	(3.1)	
10	250	9.9	220	4.8	100	3.5	3.0	3.1	
11	250	(10.1)	210	4.9	95	3.6		(3.0)	
12	260	(10.5)	220	5.0	100	3.7		(3.0)	
13	260	(10.8)	210	4.9	95	3.7		(3.0)	
14	250	(10.6)	220	4.7	100	3.5	3.3	(2.9)	
15	250	(10.3)	220	4.3	95	3.3	2.8	(2.9)	
16	235	10.2	220	3.8	95	3.0	3.2	2.9	
17	240	10.0			110	2.4	3.0	(3.0)	
18	230	9.3			---		2.1	2.9	
19	220	8.7					2.1	(2.9)	
20	230	8.0					2.0	2.9	
21	240	7.6					2.0	2.8	
22	250	6.8					2.1	2.8	
23	250	6.7					2.4	2.7	

Time: 150.0°E.

Sweep: 1.0 Mc to 13.0 Mc in 1 minute 55 seconds.

*This table supersedes table 25, CHFL-P66.

Table 30

Calcutta, India (22.6°N, 88.4°E)									
August 1949									
Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2	
00	240	9.6					1.0	(3.9)	3.0
01		(9.2)					1.0		
02		(8.8)					---		
03	(240)	(7.8)					---		(3.1)
04		(8.0)					---		
05		---					---		
06	(210)	(8.0)					2.0		(3.0)
07		(9.0)					2.8	(4.2)	
08		10.0					*	(4.7)	
09	270	10.5						(6.0)	2.8
10		11.0						(6.0)	
11		(11.0)						(7.1)	
12	---	---					---		---
13	---	---					---		
14	---	---					---		
15	---	---					*		---
16		(12.0)					4.2	(6.0)	
17		11.8					3.2	(5.5)	
18	270	12.5					2.8	(4.5)	2.8
19		(11.8)					2.0	(3.8)	
20		(10.8)					1.5	(4.1)	
21	270	10.2					1.6	(6.0)	3.0
22		(9.8)					1.5	(4.7)	
23		9.2					1.2	(4.6)	

Time: Local.

*No data received for hours 08 through 15.

Calcutta, India (22.6°N, 88.4°E) Table 31

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	240	8.1				1.1	(4.1)	3.0
01		(8.8)				---	(5.6)	
02		(8.4)				---		
03	(210)	(6.4)			1.0			(3.1)
04		(6.6)			1.0			
05		(7.1)			1.6	(5.0)		
06	(240)	(7.5)			2.0	(5.1)	(3.0)	
07		9.2			3.0	(4.7)		
08		10.1			3.4	(5.6)		
09	270	10.8			3.6	5.0	2.7	
10		11.0			3.9	(6.1)		
11		12.0			4.0	(8.0)		
12	---	(11.1)			---			(2.6)
13		(12.0)			---			
14		(12.4)			---			
15	(300)	(12.0)			---			(2.6)
16		12.5			3.8	(5.4)		
17		12.2			3.2	(4.7)		
18	270	12.4			2.5	(4.7)	2.7	
19		(11.3)			2.1	(4.2)		
20		(10.9)			1.6	(4.8)		
21	270	10.2			1.4	(3.8)	2.8	
22		9.8			1.2	(4.0)		
23		9.2			1.2	(3.6)		

Time: Local.

Oslo, Norway (60.0°N, 11.0°E) Table 32

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	300	6.8						
01	310	6.1						
02	310	5.5						
03	320	5.3						
04	305	5.2						
05	270	5.0				155	1.9	
06	250	6.4	---	---		125	2.3	
07	250	7.3	250	---		115	2.7	
08	250	8.0	235	---		110	2.9	
09	(240)	(8.9)	225	---		110	3.3	
10	(300)	(>9.0)	230	---		110	3.5	
11	---	D	220	---		110	3.6	
12	---	D	220	---		110	3.6	
13	---	D	220	---		110	3.6	
14	---	(>9.0)	220	---		110	3.5	
15	240	(>9.0)	230	---		110	3.3	
16	240	(>9.0)	240	---		110	3.1	
17	250	(>9.0)	250	---		110	2.8	
18	250	(>9.0)				120	2.4	
19	250	(>9.0)				140	2.0	
20	250	(8.2)						
21	260	(7.0)						
22	270	(7.3)						
23	300	(6.8)						

Time: 15.0°E.

Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Oslo, Norway (60.0°N, 11.0°E) Table 33

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	295	(5.6)						
01	310	(5.0)						
02	310	(4.5)						
03	310	(4.5)						
04	300	4.1						
05	280	(3.9)						
06	260	4.8			220	---		
07	250	5.8			130	2.0		
08	245	7.5	---	---	120	2.4		
09	240	(8.0)	---	---	110	2.8		
10	230	(>9.0)	220	---	110	2.9		
11	225	(>9.0)	220	---	110	3.0		
12	230	(>9.0)	225	---	110	3.0		
13	225	(>9.0)	220	---	110	---		
14	225	(>9.0)	230	---	110	---		
15	230	(>9.0)	230	---	110	2.9		
16	240	(>9.0)	---	---	110	2.7		
17	240	(>9.0)	---	---	120	2.3		
18	240	(>9.0)	---	---	130	(2.0)		
19	240	(8.3)			---	---		
20	240	(6.6)						
21	240	(6.1)						
22	260	(6.5)						
23	300	(6.0)						

Time: 15.0°E.

Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Oslo, Norway (60.0°N, 11.0°E) Table 34

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	320	2.9						
01	320	2.7						
02	310	3.0						
03	310	3.0						
04	300	3.1						
05	295	(2.7)						
06	275	3.1						
07	255	(4.2)						
08	240	5.9				160	1.9	
09	220	7.6	---	---		120	2.3	2.2
10	225	(>9.0)	---	---		115	2.6	
11	230	(>9.0)	---	---		110	2.8	
12	225	(>9.0)	---	---		110	2.9	
13	225	(>9.0)	---	---		110	2.9	
14	225	(>9.0)	---	---		110	2.8	
15	230	(>9.0)	---	---		115	2.6	
16	225	(>9.0)	---	---		125	2.3	2.2
17	220	---				140	1.9	1.7
18	225	(6.8)						
19	225	---						
20	230	(4.6)						
21	250	(3.8)						
22	250	(4.9)						
23	280	4.4						

Time: 15.0°E.

Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

Oslo, Norway (60.0°N, 11.0°E) Table 35

Time	h'F2	foF2	h'F1	foF1	h'E	foE	fEs	(M3000)F2
00	360	2.4						
01	350	(2.3)						
02	360	(2.2)						
03	380	2.1						
04	380	2.1						
05	340	2.3					2.4	
06	300	2.3						
07	310	2.4						
08	270	(3.2)						
09	235	8.2			---	---	2.4	
10	220	(8.0)			140	2.1	2.4	
11	220	(>9.0)			130	2.4	2.4	
12	220	(9.0)			110	2.4		
13	220	(>9.0)			120	2.4		
14	220	(>9.0)			130	2.4	2.4	
15	220	(>9.0)			145	2.1	2.4	
16	220	(8.9)			---		2.4	
17	215	(7.1)						
18	220	6.0						
19	230	4.2						
20	270	3.3						
21	295	2.9						
22	325	2.6						
23	360	2.4						

Time: 15.0°E.

Sweep: 1.6 Mc to 10.0 Mc in 5 minutes, automatic operation.

TABLE 36
 Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

National Bureau of Standards
 Scaled by B.E.B. J.D. (Institution)

Observed at Washington, D. C. February, 1950
 (Month) (Year)

hF2 3.0 Km
 (Characteristic) (Unit)

Day	75°W										Mean Time										Calculated by <u>B.E.B.</u> J.D. By H.			
	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	290	310	290	260	270	240	270	240	230	230	230	280	250	230	230	220	240	220	210	220	210	220	270	270
2	300	280	270	270	290	300	300	290	240	230	230	220	210	230	230	230	230	220	220	230	230	230	250	230
3	270	300	290	300	300	300	300	280	230	230	230	210	230	210	230	230	230	220	220	230	230	250	250	270
4	270	280	270	270	270	240	260	250	220	200	230	260	270	250	250	230	230	210	220	220	A	C	230	250
5	270	280	280	270	270	240	230	230	210	200	200	200	220	220	220	230	210	210	210	210	210	210	230	250
6	280	290	300	300	300	290	250	230	210	210	210	200	200	200	210	210	220	210	210	210	210	210	230	250
7	220	300	300	270	270	240	250	230	220	200	210	200	210	200	210	210	220	210	210	210	210	210	230	250
8	A	A	200	200	270	220	210	230	210	200	200	220	220	250	270	210	230	210	210	210	210	210	230	250
9	260	270	270	270	280	250	220	210	210	200	200	200	210	210	210	210	210	210	210	210	210	210	230	250
10	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
11	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
12	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
13	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
14	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
15	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
16	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
17	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
18	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
19	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
20	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
21	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
22	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
23	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
24	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
25	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
26	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
27	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
28	260	270	280	260	270	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	230	250
29																								
30																								
31																								
Median	270	280	280	270	270	260	250	230	220	210	210	210	210	210	210	210	210	210	210	210	210	210	210	210
Count	26	26	28	28	26	27	28	28	28	28	28	28	28	28	28	27	27	28	28	28	27	27	28	28

Sweep 1.0 Mc to 3.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 38

Control Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

foF2 _____ Mc _____ February, 1950
(Characteristics) (Unit) (Month)

Observed at _____ Washington, D. C.

Scoted by: B. E. B. J. D.
(Institution)

National Bureau of Standards

Washington, D.C.																								
Observed at																								
Lat 38.7°N, Long 77.1°W																								
75°W																								
Mean Time																								
B. E. B. J. D. By H.																								
Day	0030	0130	0230	0330	0430	0530	0630	0730	0830	0930	1030	1130	1230	1330	1430	1530	1630	1730	1830	1930	2030	2130	2230	2330
1	4.3	4.6	4.8	4.6	4.1	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.7
2	(3.9)	(4.1)	3.6	2.9	2.6	2.5	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4	2.4
3	3.6	3.4	3.3	3.1	3.1	2.8	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9	2.9
4	4.5	4.3	4.3	4.3	3.7	3.4	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
5	(4.6)	(4.7)	(4.9)	5.0	4.6	4.3	(3.8)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
6	(3.9)	3.9	(3.9)	3.7	3.6	3.7	(3.8)	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3
7	3.7	(4.0)	4.1	3.9	3.7	3.3	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1	3.1
8	(3.4)	(3.1)	3.4	(4.0)	4.7	(4.3)	3.0	(5.4)	C	7.9	(10.5)	(10.2)	(11.2)	10.9	11.1	11.2	(10.7)	(9.6)	(8.4)	(7.1)	6.5	(5.6)	(5.5)	(4.9)
9	(4.9)	(4.3)	(4.2)	(4.2)	(4.3)	(4.3)	(3.6)	(5.8)	(7.5)	8.6	(8.8)	9.9	(9.9)	10.5	10.7	10.7	(10.1)	(9.6)	8.8	(6.7)	(4.9)	4.2	(3.9)	(3.5)
10	(3.2)	2.9	3.1	3.1	(3.2)	3.2	3.3	6.4	7.7	(8.1)	9.2	10.5	10.6	9.7	(10.2)	10.3	9.0	(8.9)	7.0	6.3	(4.8)	3.5	(3.2)	3.2
11	3.5	(3.5)	3.7	3.9	(3.6)	C	3.7	5.6	7.0	8.4	9.6	(10.1)	11.0	9.8	9.2	(9.2)	9.0	8.6	(7.0)	(6.1)	(5.5)	4.8	(3.9)	(3.9)
12	3.6	(3.4)	(3.0)	2.6	2.8	(3.2)	C	C	7.9	9.1	9.2	10.0	10.6	(10.4)	9.7	(9.2)	(9.8)	(8.8)	(6.9)	(5.7)	(5.3)	(4.5)	(4.0)	(3.6)
13	(3.8)	3.6	3.8	(3.9)	(3.9)	3.8	3.8	6.6	7.6	8.1	9.7	10.0	10.2	9.6	10.0	10.0	(9.8)	(9.4)	(8.4)	(6.7)	(6.5)	(4.9)	(4.1)	4.2
14	4.4	(4.4)	4.4	4.2	(4.0)	3.8	(4.0)	(6.7)	8.6	8.8	9.4	9.7	10.1	(9.9)	10.0	(10.5)	(10.9)	(10.1)	(8.8)	6.9	(6.3)	(5.9)	(5.1)	(4.9)
15	4.7	4.7	4.7	(4.5)	4.2	(4.2)	(4.2)	(7.3)	(9.7)	9.9	10.7	10.4	11.3	(11.3)	11.3	10.9	(11.4)	11.0	(9.9)	8.1	6.8	5.5	(4.9)	(4.4)
16	4.5	4.4	(4.4)	4.5	4.4	(4.0)	(4.0)	7.7	(9.5)	10.7	10.7	10.9	11.0	10.6	10.9	11.3	10.8	9.9	(8.3)	(7.1)	6.2	5.3	5.0	4.7
17	4.7	4.6	4.7	4.6	4.6	4.3	4.5	(7.3)	9.2	10.4	10.6	(11.2)	11.3	11.3	11.3	11.3	(11.1)	(10.2)	(9.0)	(7.9)	(7.1)	(6.2)	5.6	5.1
18	4.9	4.9	4.9	4.7	(4.4)	(4.3)	4.7	(7.7)	9.4	10.2	(9.9)	(11.4)	(11.6)	11.5	(11.8)	(11.9)	(11.5)	(10.9)	(9.4)	(8.1)	(7.3)	(6.4)	(6.1)	5.7
19	(5.7)	(5.4)	5.4	5.2	5.0	4.8	4.7	8.0	9.5	10.2	11.2	11.3	(12.2)	(11.7)	(11.7)	(11.4)	(11.4)	(10.8)	(9.5)	(8.2)	7.4	6.4	(5.8)	(5.7)
20	5.6	5.5	(5.5)	(5.3)	4.8	(4.9)	(5.4)	(7.8)	(10.0)	11.2	11.5	11.7	11.9	10.6	10.6	10.6	11.0	(12.2)	(10.4)	(9.0)	(8.3)	(7.4)	(6.5)	(6.1)
21	(2.6)	(3.0)	(1.9)	(3.3)	(3.3)	(3.1)	3.7	(7.1)	(9.0)	(11.1)	11.4	(12.3)	12.3	12.4	11.3	(10.4)	(10.2)	(9.5)	(7.8)	(6.1)	(5.4)	(4.9)	(3.7)	3.3
22	(2.7)	2.3	2.0	2.3	2.3	2.3	3.3	(6.2)	(9.0)	9.4	11.4	(11.6)	11.8	11.9	12.5	12.6	(12.0)	(10.7)	(9.4)	(7.6)	(6.7)	(6.7)	(6.1)	(5.6)
23	5.4	(5.4)	(5.2)	5.0	4.7	(4.6)	4.2	(6.0)	7.1	7.8	9.6	10.3	11.6	11.5	11.4	(12.1)	12.9	(11.1)	(10.4)	(9.2)	(8.5)	(7.8)	(7.2)	(6.5)
24	(2.1)	2.1	(2.0)	(1.9)	(1.7)	(2.4)	3.2	7.4	(9.2)	(10.5)	(12.1)	12.5	(11.9)	11.3	11.2	(10.6)	(10.2)	(9.8)	(8.7)	(7.9)	(7.2)	(6.5)	(5.8)	(5.4)
25	(4.3)	(4.3)	(4.2)	(3.7)	(2.9)	(2.5)	3.7	6.9	8.8	9.8	10.5	11.1	11.0	11.4	11.7	11.4	(11.4)	(10.5)	(9.3)	(8.7)	(7.9)	(7.1)	(6.2)	(5.6)
26	5.3	5.0	4.8	4.6	(4.2)	(4.1)	(4.6)	7.8	(8.7)	(10.0)	10.4	10.8	11.3	11.1	11.1	(11.0)	11.2	(10.0)	(8.6)	(7.7)	(7.2)	(6.6)	(6.1)	5.5
27	5.1	4.9	4.9	(4.5)	(4.0)	(3.7)	(4.1)	6.9	8.7	9.5	9.7	(10.0)	10.8	10.7	11.1	11.1	10.9	(10.0)	(8.9)	C	C	(6.6)	(6.3)	(6.2)
28	(6.9)	(5.5)	(5.2)	4.8	(4.2)	(4.3)	4.5	6.0	6.7	(7.4)	(9.2)	10.0	(10.8)	(10.7)	(10.7)	(10.2)	(10.2)	(9.2)	(8.5)	(7.4)	(6.5)	5.6	(5.7)	(5.5)
29																								
30																								
31																								
Median	4.4	4.3	4.2	4.1	4.0	(3.9)	3.8	6.6	8.6	9.2	9.7	10.6	11.0	11.0	11.0	11.1	(10.8)	(10.0)	(8.4)	(7.4)	(6.2)	(5.3)	(4.8)	(4.3)
Count	28	28	28	28	28	27	27	27	27	28	28	28	28	28	28	28	28	28	28	28	27	28	28	28

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 39
Control Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

h'F1 _____ Km _____ February, 1950
(Characteristic) (Unit) (Month)

Observed at _____ Washington, D. C.

Lat 38.7°N, Long 77.1°W

National Bureau of Standards
(Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By H.

75°W																									Mean Time										B.E.B., J.D., By H.									
Lat. 38.7°N, Long. 77.1°W																																												
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23																				
1									Q	Q	Q	220	Q	Q	Q	Q	Q	Q																										
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
4									Q	Q	Q	210	210	200	Q	Q	Q	Q																										
5									Q	Q	Q	Q	Q	220	Q	Q	Q	Q																										
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
8									Q	Q	Q	Q	Q	Q	230	Q	Q	Q																										
9									Q	Q	Q	Q	220	Q	230	Q	Q	Q																										
10									Q	Q	Q	Q	220	Q	Q	Q	Q	Q																										
11									Q	Q	Q	Q	Q	210	Q	Q	Q	Q																										
12									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
13									Q	Q	Q	220	220	210	Q	Q	Q	Q																										
14									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
15									Q	Q	Q	Q	200	Q	Q	Q	Q	Q																										
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
18									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
19									Q	Q	Q	210	Q	210	Q	Q	Q	Q																										
20									Q	Q	Q	Q	Q	230	Q	260	260	Q																										
21									Q	Q	210	Q	210	220	Q	Q	Q	Q																										
22									Q	Q	200	Q	Q	Q	Q	Q	Q	Q																										
23									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
24									Q	210	Q	Q	210	Q	Q	Q	Q	Q																										
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q																										
26									Q	Q	Q	Q	200	Q	Q	Q	Q	Q																										
27									Q	Q	210	Q	Q	210	210	Q	Q	Q																										
28									Q	220	200	Q	Q	210	Q	Q	Q	Q																										
29																																												
30																																												
31																																												
Median																																												
Count																																												

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 40
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

foF1 _____, Mc _____, February 1950
(Characteristic) (Unit) (Month)
Observed at Washington, D. C.

National Bureau of Standards
Scaled by: B. E. B., J. D.
(Institution)

Lat. 38.7°N, Long. 77.1°W

Calculated by: B. E. B., J. D., By H.

Mean Time

75°W

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
4									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
5									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
8									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
9									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
10									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
11									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
12									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
13									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
14									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
15									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
18									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
19									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
20									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
21									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
22									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
23									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
24									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
26									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
27									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
28									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
29									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
30									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
31									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
Median									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						
Count									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q						

Sweep 1.0 Mc to 25.0 Mc in 0.5 min
Manual ☐ Automatic ☒

TABLE 41
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.
IONOSPHERIC DATA

h'E _____ **Km** _____ **February** _____ **1950**
(Characteristic) (Unit) (Month)

Observed at **Washington, D. C.**

Lat. **36.7°N**, Long. **77.1°W**

National Bureau of Standards
(Institution)

Scaled by: **B.E.B., J.D.**

Calculated by: **B.E.B., J.D.**, By **H.**

Calculated by: B.E.B., J.D., By H.																								
75°W																								
Mean Time																								
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	(110) B	110	110	(100) B	(110) B	(110) B	(110) B	110	S						
2									110	110	100	100	(110) B	120	[120] B	110	[120] B	110						
3									B	B	(110) B	(110) B	120	(100) S	[100] B	110	[110] B	110						
4									130	120	100	110	100	100	110	100	100	120						
5									B	B	100	100	110	[100] A	100	100	110	130						
6									120	(100) A	(100) A	(100) A	100	100	100	100	100	130						
7									110	110	(100) A	(100) A	(100) A	100	100	100	110	140						
8									(110) B	[100] C	(100) A	(100) A	(100) A	(100) A	110	110	[120] B	120						
9									120	(100) A	(100) A	(100) A	(110) B	[110] S	110	110	110	120						
10									110	100	100	100	100	100	110	100	(100) A	120						
11									(100) A	(100) A	100	100	100	100	100	100	110	(110) A						
12									120	C	[100] C	(100) A	[100] C	[100] C	C	C	C	110						
13									110	(100) A	(100) A	[100] C	(100) A	(100) A	100	B	B	B						
14									100	100	100	100	100	[100] B	100	100	100	110						
15									100	(100) A	(100) A	(100) A	(100) A	[100] A	100	100	100	110						
16									(100) A	(100) A	(100) A	(100) A	(100) A	(100) A	100	100	100	110						
17									(100) A	(100) A	(100) A	(100) A	(110) B	110	100	100	100	100	S					
18									[110] C	(100) A	(100) A	[100] C	100	100	100	100	100	110						
19									100	100	100	100	100	100	100	100	100	110						
20									100	100	[100] C	100	100	100	100	100	100	130						
21									B	100	100	100	100	100	100	100	110	110						
22									(100) A	(100) A	(100) A	(100) A	[100] B	(100) B	100	100	100	100						
23									(100) A	(100) A	(100) A	(100) A	100	100	100	(100) B	110	100						
24									B	(100) A	(100) A	(100) A	100	[100] B	100	100	110	120						
25									110	110	100	100	100	100	100	100	110	100						
26								S	100	H	100	100	100	100	100	[100] B	110	110						
27									B	B	100	B	S	B	(110) B	110	110	120						
28								S	(120) S	B	B	100	B	B	(110) B	(110) S	120	B						
29																								
30																								
31																								
Median								-	110	(100)	(100)	(100)	100	100	100	100	110	110						
Count									22	23	26	27	27	26	28	26	26	24						

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 42

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

National Bureau of Standards

Scaled by: B.E.B., J.D. (Institution)

Calculated by: B.E.B., J.D., By H.

foE _____ Mc _____ February, 1950

(Unit)

Observed at Washington, D.C.

Lat. 38.7°N, Long. 77.1°W

75°W Mean Time

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1									B	2.7	(3.1) ^P	3.3	(3.4) ^P	3.6	3.2	2.9	2.6	(1.9) ^S						
2									2.1	2.7	3.0	3.3	(3.3) ^P	(3.2) ^P	3.2	(2.9) ^P	2.6	1.9						
3									B	B	B	(3.2) ^B	3.3	(3.4) ^P	3.2	2.8	(2.4) ^B	1.9						
4									(2.0) ^S	2.7	3.0	3.2	3.3	3.3	3.1	2.9	(2.5) ^S	1.8						
5									(2.1) ^B	(2.4) ^B	2.8	3.2	(3.3) ^P	(3.2) ^A	3.2	(3.0) ^P	2.4	1.8						
6									2.1	(2.5) ^A	2.9	3.2	3.2	(3.2) ^P	3.1	3.0	2.5	1.9						
7									2.2	2.6	3.0	3.1	3.2	3.2	(3.0) ^S	2.8	2.5	2.0						
8									B	C	3.0	3.1	3.2	3.2	3.1	(2.7) ^S	(2.5) ^S	(2.0) ^S						
9									2.0	(2.4) ^S	2.8	3.1	3.2	(3.2) ^S	3.1	2.8	2.5	2.0						
10									2.2	2.3	2.8	3.0	3.2	3.1	2.9	2.9	2.5	1.9						
11									A	2.6	2.9	3.2	3.3	3.2	3.2	3.1	2.6	2.0						
12									3.2	C	(3.2) ^C	3.4	(3.4) ^C	(3.4) ^C	(3.2) ^C	C	C	(2.0) ^S						
13									2.3	2.8	3.2	3.4	3.4	3.5	3.3	B	K	B	K					
14									2.4	2.9	3.0	(3.2) ^F	3.4	(3.5) ^B	3.6	3.2	2.7	2.2						
15									2.4	(2.8) ^A	3.3	3.4	A	M	3.5	3.1	2.8	2.2						
16									2.5	(2.8) ^A	3.2	3.4	3.4	(3.5) ^P	3.4	3.2	2.8	2.2						
17									2.5	2.9	3.1	3.3	3.4	3.7	3.6	3.3	3.1	2.2	S					
18									(2.3) ^C	(2.8) ^A	(3.3) ^A	(3.4) ^C	3.5	3.6	3.6	3.2	2.9	2.2						
19									2.4	3.0	3.4	3.6	3.7	3.7	3.5	3.3	2.8	2.3						
20									2.5	(3.1) ^F	(3.4) ^C	(3.5) ^S	3.6	3.6	3.5	3.3	2.8	2.3						
21									B	2.8	(2.9) ^P	3.1	(3.2) ^P	(3.2) ^P	3.3	3.2	2.8	2.4						
22									2.5	3.0	3.3	3.5	3.6	3.5	(3.3) ^P	3.3	2.9	2.3						
23									2.5	2.9	3.2	3.4	3.5	(3.3) ^P	3.3	3.2	2.9	(2.3) ^B						
24									B	2.9	3.2	3.4	3.6	3.5	3.4	3.1	2.8	2.2						
25									2.5 ^H	3.1	3.3	3.4	3.4	3.4	3.3	3.2	2.8	2.4						
26									1.7	2.4	3.0	3.3	3.4	(3.6) ^S	3.6	3.4	2.9	2.4						
27									B	2.9	3.2	B	S	3.5	3.5	3.4	2.9	2.4						
28									1.7	2.5	B	B	3.2	(3.4) ^B	3.4	3.5	3.1	2.8	(2.3) ^B					
29																								
30																								
31																								
Median									2.4	2.8	3.2	3.3	3.4	3.4	3.3	3.1	2.8	2.2						
Count								2	2.1	2.4	2.6	2.7	2.6	2.7	2.8	2.6	2.6	2.7						

Sweep J.O. Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

TABLE 43

Es (Characteristics) Mc, Km February 1950
Observed at Washington, D.C.

Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D.C.

National Bureau of Standards
(Institution)

Scaled by B.E.B., J.D.
Calculated by B.E.B., J.D., By H.

		75°W										Mean Time													
		Lat 38.7°N, Long 77.1°W																							
Day		00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
2	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	31 110	74 110	G	G	42 100	G	G
3	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
4	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	70 100	G	G	G	G
5	G	G	G	G	G	G	G	36 100	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
6	24 100	G	G	G	G	G	G	G	G	G	23 100	25 100	23 100	G	G	G	G	G	G	G	G	G	G	G	G
7	G	G	G	G	G	G	G	G	G	G	G	23 100	23 100	21 100	G	G	G	G	G	G	G	G	G	36 100	41 100
8	41 100	36 100	G	G	G	G	G	G	G	G	C	35 100	45 100	23 100	26 100	G	G	G	G	G	G	G	G	G	G
9	G	G	G	G	G	G	G	G	G	G	23 100	28 100	24 100	G	G	G	G	G	G	G	G	G	G	G	G
10	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	24 100	G	G	G	G	G	G	G
11	C	G	24 100	C	C	C	C	C	54 100	74 100	40 100	G	G	G	G	G	G	G	17 110	G	C	C	C	G	G
12	G	G	G	G	C	C	C	C	C	G	C	26 100	C	C	C	C	C	C	G	G	G	G	G	G	G
13	G	G	G	G	C	C	C	C	G	G	25 100	26 100	C	25 100	25 100	G	G	G	G	G	G	G	G	G	G
14	G	G	G	G	C	C	C	C	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
15	G	G	G	G	C	C	C	C	G	G	27 100	28 100	27 100	35 100	M	G	G	G	G	G	G	22 100	G	G	G
16	G	G	G	G	C	C	C	C	G	G	22 100	31 100	30 100	29 100	G	G	G	G	G	G	G	G	G	G	G
17	G	G	G	G	C	C	C	C	G	G	23 100	26 100	26 100	24 100	G	G	G	G	G	G	G	G	G	G	G
18	G	C	C	C	C	C	C	C	G	C	29 100	35 100	C	G	G	G	G	G	G	G	G	G	G	G	G
19	G	G	G	G	C	C	C	C	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
20	G	G	G	G	C	C	C	C	G	G	G	G	G	G	G	G	G	G	23 100	23 100	36 100	17 130	G	G	G
21	G	G	G	G	C	C	C	C	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
22	33 120	63 110	G	G	G	G	G	G	G	22 100	24 100	25 100	33 100	G	G	G	G	G	G	G	G	G	G	G	G
23	G	G	G	G	G	G	G	G	G	18 100	28 100	23 100	23 100	G	G	G	G	G	G	G	G	G	G	G	G
24	G	G	G	G	G	G	G	G	G	G	20 100	25 100	25 100	G	G	G	G	G	G	G	G	G	G	G	G
25	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
26	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
27	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
28	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G	G
29																									
30																									
31																									
Median	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**	**
Count	47	27	27	26	25	25	27	26	27	27	26	26	26	27	26	27	27	27	28	28	27	27	25	27	27

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

** MEDIAN fEs LESS THAN MEDIAN foE, OR LESS THAN LOWER FREQUENCY LIMIT OF RECORDER.

TABLE 44
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

(M1500)F2, (Unit) February, 1950
(Month)

National Bureau of Standards
(Institution)

Observed at Washington, D. C.
Scaled by: B.E.B., J.D.
Calculated by: B.E.B., J.D., By: H.

		75°W										Mean Time										B.E.B., J.D., By: H.			
		Lat 38.7°N, Long 77.1°W																							
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	
1	1.8	1.7	1.8	1.9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
2	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
3	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
4	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
5	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
6	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
9	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
10	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
11	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
12	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
13	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
14	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
15	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
16	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
17	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
18	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
19	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
20	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
21	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
22	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
23	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
24	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
25	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
26	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
27	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
28	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
29	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
30	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
31	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
Median	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	
Count	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	27	

Sweep 1.0 Mc to 35.0 Mc in 3.3 min
Manual □, Automatic ■

TABLE 45
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

IONOSPHERIC DATA

(M3000)F2 February 1950

(Characteristics)

(Unit)

Washington, D. C.

Observed at

Lat **38.7°N**, Long **77.1°W**

75°W Mean Time

Calculated by: **B.E.B., J.D., By H.**

National Bureau of Standards
(Institution)

Scaled by: **B.E.B., J.D.**

Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	2.7	2.5	2.6	3.0	(3.0)F	(3.1)F	3.1	3.1	3.3	3.4	3.2	3.2	3.1	3.0	3.0	3.0	3.1	(3.2)F	(3.2)F	(3.1)F	(3.3)F	3.1 F	(2.9)F	2.8
2	(2.7)F	(3.0)F	(3.1)F	2.8 F	2.8 F	2.8 F	2.6 F	3.0 F	3.4 F	3.2 F	3.1	3.0	2.8	(2.9)F	2.8	3.0	(3.1)F	(3.0)F	3.2	(3.0)F	2.9 F	(3.0)F	3.0	(2.7)F
3	2.8	2.9	2.9 F	2.8 F	2.9 F	2.9 F	2.6	2.7	(2.7)F	(3.1)F	3.3	3.2	3.0	2.9	(2.9)F	(3.0)F	(3.0)F	3.1	(3.1)F	3.1	(3.0)F	2.9	3.0	(2.7)F
4	2.9 F	2.7 F	2.9 F	2.9 F	(3.0)F	3.0 F	3.1 F	3.1 F	3.6 F	3.3	3.3	3.2	3.0	3.0	3.1	3.0	3.1	(3.1)F	(3.1)F	(3.0)F	3.1	(3.3)F	3.1 F	2.9 F
5	2.9 F	2.6 F	2.8 F	3.0 F	(3.1)F	3.2 F	3.1 F	3.3 F	3.5 F	3.5	3.4 F	3.3	3.3	3.1	3.1	3.1	(3.2)F	(3.2)F	(3.2)F	3.2	3.2	3.2	(3.1)F	(2.9)F
6	(2.9)F	(2.9)F	2.8	2.7	2.8	2.9 F	2.9	(3.3)F	3.5	3.6	3.3	3.2	3.2	3.1	3.1	3.1	3.2	3.3	(3.2)F	3.1	3.3	(3.1)F	2.9	(2.8)F
7	2.7	2.7	(2.9)F	(3.0)F	2.9	3.0	3.1 F	3.2 F	3.6	3.4	3.2	3.1	3.2	(3.1)F	(3.1)F	(3.1)F	3.1	3.2	3.2	3.3	2.9	3.0	2.9	(2.8)F
8	(2.9)F	(2.9)F	(2.8)F	(2.8)F	(3.0)F	3.3	(3.3)F	(3.1)F	(3.4)F	C	3.1	(3.1)F	3.1	3.1	3.1	(3.3)F	(3.1)F	(3.2)F	(3.2)F	5	(3.2)F	(3.0)F	5	C
9	(2.9)F	(2.9)F	(2.8)F	(2.9)F	(2.8)F	(2.8)F	(3.2)F	(3.3)F	(3.5)F	3.4	(3.3)F	3.2	3.3	(3.0)F	3.1	3.0	3.1	(3.2)F	3.2	(3.3)F	(3.1)F	3.0	(3.0)F	(3.0)F
10	(3.0)F	(3.1)F	3.0	3.1	3.0 F	3.1	3.1	3.2	3.5	3.6	3.3	3.1	3.2	3.3	(3.1)F	(3.2)F	(3.3)F	(3.2)F	3.2	(3.3)F	C	3.3	3.1	(2.8)F
11	C	(2.9)F	2.9	C	3.1 F	C	3.1 F	C	3.4	C	3.3	3.2	3.0	(3.4)F	3.2	3.2	3.2	(3.3)F	3.2	C	(3.2)F	C	(3.2)F	(3.1)F
12	(3.0)F	(3.0)F	(2.9)F	(2.9)F	2.8 F	C	(3.1)F	C	3.4	C	3.3	3.3	3.2	C	C	C	C	(3.4)F	(3.2)F	3.0	(3.2)F	C	(3.0)F	(2.9)F
13	3.0 F	3.0 F	(2.9)F	2.8 F	C	(3.0)F	3.0 F	3.2	3.5	(3.4)F	3.1	3.3	(3.3)F	3.2	3.2	3.1	3.1	(3.1)F	(3.2)F	(3.2)F	(3.0)F	(3.0)F	(2.9)F	(2.8)F
14	(2.7)F	2.7	2.8	2.9	3.1	3.0	3.0	3.3	3.5	3.4	3.3	3.2	3.2	3.2	3.0	(3.0)F	(3.0)F	(3.2)F	(3.2)F	(3.1)F	(3.0)F	(2.9)F	(3.0)F	(2.9)F
15	2.9	2.9	2.8	2.8	2.8	2.7	(3.0)F	(3.2)F	(3.4)F	(3.2)F	(3.2)F	3.2	3.2	3.2	3.1	(3.0)F	(3.0)F	(3.0)F	(3.1)F	3.1	(3.1)F	3.0	2.9	2.9
16	2.7	(2.7)F	2.9	3.0	3.0	2.9	(2.8)F	(3.2)F	3.4	3.4	3.3	3.2	3.2	3.1	2.9	3.0	3.1	(3.2)F	(3.2)F	3.1	(3.1)F	3.0	3.0	2.9
17	2.8	2.9	2.9	2.8	3.0	2.9	3.0	3.4	3.4	(3.4)F	3.2	3.2	3.0	3.0	3.0	3.0	3.0	3.1	(3.1)F	(3.1)F	3.0	(3.0)F	C	(3.0)F
18	2.9	C	C	2.8	2.8	2.8	C	3.3	C	3.2	3.2	C	(3.0)F	2.9	3.0	(3.0)F	(3.0)F	(3.1)F	(3.1)F	(3.0)F	(3.0)F	(3.0)F	2.9	(2.9)F
19	(2.8)F	2.8	(2.8)F	2.8	2.9	2.9	2.9	3.3	3.4	3.3	3.1	3.0	3.0	2.9	(3.0)F	(3.0)F	(3.0)F	(3.1)F	(3.1)F	3.0	(2.9)F	(2.9)F	2.7	
20	2.6	(2.6)F	2.6	2.7	2.7	(2.8)F	(2.8)F	(3.0)F	(3.2)F	(3.2)F	C	2.9	2.9	2.8 F	2.4 F	(2.4)F	(2.4)F	(2.5)F	(2.5)F	5	(2.5)F	(2.5)F	(2.3)F	(2.5)F
21	(2.4)F	2.6 F	2.3 F	2.8 F	2.7 F	(2.7)F	(2.8)F	3.0 F	(3.4)F	3.2 F	3.1	(2.9)F	2.9	2.9	(3.0)F	(3.0)F	(2.4)F	(3.0)F	(2.9)F	(2.9)F	(2.9)F	(2.6)F	(2.7)F	
22	(2.7)F	(2.7)F	(2.6)F	2.8 F	2.7 F	2.8 F	2.8 F	3.2 F	3.5	(3.1)F	3.2	3.1	2.9	2.8	2.8	2.8	(2.9)F	(2.9)F	(3.0)F	(3.1)F	(3.0)F	(2.8)F	(2.7)F	(2.9)F
23	3.0 F	(3.0)F	(2.7)F	2.8 F	2.8 F	2.7 F	(2.9)F	3.1 F	3.2 F	3.2 F	3.0 F	3.0 F	2.7	2.9	2.8	2.7 F	2.7 F	(2.8)F	(2.8)F	(2.8)F	(2.8)F	(2.6)F	(2.6)F	(2.2)F
24	(2.6)F	(2.6)F	F K	(2.6)F	F K	F K	F K	(3.1)F	3.4 F	3.4 F	(3.1)F	(3.1)F	(3.1)F	3.0	(3.1)F	3.0	(3.1)F	(3.1)F	(3.1)F	(3.1)F	(2.9)F	(2.9)F	(2.7)F	(2.7)F
25	(2.6)F	2.8 F	(2.7)F	(3.0)F	(3.0)F	2.9 F	(2.7)F	(3.1)F	3.2	3.3	3.0	3.0	3.0	3.0	3.0	(3.0)F	(3.0)F	3.0	(3.0)F	(2.9)F	(3.0)F	(2.9)F	(2.9)F	(2.9)F
26	(2.9)F	2.8	2.8	2.8	2.7	(2.9)F	(3.1)F	(3.3)F	3.5	(3.2)F	3.2	3.1	3.2	3.1	(2.9)F	3.0	3.1	(3.1)F	(3.1)F	(3.0)F	(3.0)F	(3.1)F	3.0	(3.0)F
27	3.0 F	2.9 F	3.0 F	(2.9)F	3.0 F	2.8 F	3.0 F	(3.4)F	3.3	3.3	3.3	3.1 F	3.1	3.1	3.0	2.9	3.1	(3.1)F	(3.1)F	(2.9)F	C	2.9	(2.8)F	(2.9)F
28	(2.9)F	(2.8)F	(2.8)F	(2.7)F	2.5 F	(2.6)F	(2.7)F	3.2 F	3.3	3.2	3.0	(3.1)F	3.0	2.9	(2.7)F	(3.1)F	(3.1)F	(3.1)F	(3.0)F	(2.9)F	(3.1)F	(3.1)F	(2.8)F	2.7
29																								
30																								
31																								
Median	(2.9)	2.9	2.8	2.8	2.9	2.9	3.0	3.2	3.4	3.3	3.2	3.1	3.1	3.0	3.0	3.0	(3.1)	(3.1)	(3.1)	(3.1)	(3.0)	(3.0)	(2.9)	(2.9)
Count	27	27	26	27	24	26	25	27	27	26	26	27	27	26	27	27	27	28	28	25	26	26	26	27

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

Form adopted June 1946

TABLE 46
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

(M3000)FI, (Unit) February 1950
Observed at Washington, D. C.

IONOSPHERIC DATA

National Bureau of Standards
(Institution)

Scaled by B.E.B., J.D.

Calculated by B.E.B., J.D., By H.

Lat 38.7°N , Long 77.1°W		75°W											Mean Time											Calculated by: B.E.B., J.D. , By H.			
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23			
1									Q	Q	Q	L	Q	Q	Q	Q	Q	Q									
2									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
3									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
4									Q	Q	Q	L	L	Q	Q	Q	Q	Q									
5									Q	Q	Q	Q	L	L	Q	Q	Q	Q									
6									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
7									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
8									Q	C	Q	Q	Q	Q	L	Q	Q	Q									
9									Q	Q	Q	Q	L	Q	L	Q	Q	Q									
10									Q	Q	Q	Q	L	Q	Q	Q	Q	Q									
11									Q	Q	Q	Q	L	Q	Q	Q	Q	Q									
12									Q	C	C	Q	C	C	C	C	C	Q									
13									Q	Q	Q	L	L	L	Q	B	B	Q									
14									Q	Q	Q	Q	Q	B	Q	Q	Q	Q									
15									Q	Q	Q	Q	L	M	Q	Q	Q	Q									
16									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
17									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
18									C	Q	Q	C	Q	Q	Q	Q	Q	Q									
19									Q	Q	Q	L	Q	L	Q [*]	Q [*]	Q [*]	Q [*]									
20									Q	Q	C	Q	Q	L [*]	Q [*]	L [*]	L [*]	Q [*]									
21									Q	Q	L	Q	L	L	Q	Q	Q	Q									
22									Q	Q	L	Q	Q	Q	Q	Q	Q	Q									
23									Q	Q	Q	Q	Q	Q	Q	Q	Q [*]	Q [*]									
24									Q	L	Q	Q	L	Q	Q	Q	Q	Q									
25									Q	Q	Q	Q	Q	Q	Q	Q	Q	Q									
26									Q	Q	Q	Q	L	Q	Q	Q	Q	Q									
27									Q	Q	L	Q	Q	L	L	Q	Q	Q									
28									Q	L	L	Q	Q	L	Q	Q	Q	Q									
29																											
30																											
31																											
Median										—	—	—	—	—	—	—	—										
Count																											

Sweep 1.0 Mc to 25.0 Mc in 0.5 min
Manual ☐ Automatic ☒

TABLE 47
Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

(M1500E)
(Characteristic) February 1950
(Month)

Observed at Washington, D. C.

Lat. 38.7°N, Long. 77.1°W

National Bureau of Standards
(Institution)

Scaled by: B.E.B., J.D.

Calculated by: B.E.B., J.D., By H.

75°W																								Mean Time				B.E.B., J.D., By H.			
Day	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23							
1									B	4.4	(4.5) ^P	4.1	(4.2) ^P	4.2	4.3	4.4	4.3	(4.1) ^S													
2									4.2	4.1	4.3	4.1	(4.2) ^P	(4.2) ^B	4.2	B	4.2	4.4													
3									B	B	B	(4.2) ^B	4.1	(4.3) ^P	4.1	4.6	B	4.2													
4									(4.2) ^S	4.3	4.1	4.1	4.2	4.2	4.3	4.2	(4.4) ^S	4.3													
5									(3.6) ^B	B	4.3	4.1	(4.2) ^P	A	4.4	(4.3) ^P	4.5	4.3													
6									4.1	A	4.1	4.1	4.3	(4.4) ^P	4.4	4.3	3.8														
7									4.1	4.3	4.3	4.3	4.4	4.4	(4.4) ^S	4.4	4.0	3.9													
8									B	C	4.2	3.9	3.9	4.1	4.1	(4.5) ^S	(4.0) ^S	(3.9) ^S													
9									4.1	S	4.2	3.9	4.1	(4.1) ^S	4.2	4.4	4.2	3.5													
10									4.3	4.6	4.5	4.3	4.4	4.4	4.5	4.5	4.3	4.2													
11									A	4.3	4.2	4.1	4.2	4.1	4.1	4.2	4.3	3.8													
12									4.2	C	C	4.2	C	C	C	C	C	(4.1) ^S													
13									4.0	4.3	4.3	4.4	4.3	4.2	4.2	B	B	B													
14									4.0	4.2	4.5	(4.1) ^F	4.1	B	4.2	4.2	4.4	4.0													
15									4.1	(4.3) ^A	4.2	4.4	A	M	4.3	4.3	4.2	4.4													
16									3.9	A	4.3	4.3	4.4	(4.3) ^P	4.4	4.2	4.4	4.1													
17									3.8	4.1	4.4	4.2	4.4	4.1	4.2	4.2	4.2	4.1	S												
18									C	A	(4.2) ^P	C	4.1	4.1	4.2	4.4	4.2	4.0													
19									4.4	4.2	4.1	4.2	4.2	4.2	4.1	4.2	4.5	4.1													
20									4.2	(4.3) ^F	C	(4.3) ^S	4.3	4.3 ^K	4.2 ^K	4.2 ^K	4.3 ^K	3.5 ^K													
21									B	4.3	(4.3) ^P	4.4	(4.4) ^P	(4.2) ^P	3.9	4.1	4.1	4.1													
22									4.3	4.2	4.2	4.2	4.2	4.2	(4.2) ^P	4.1	4.1	4.0													
23									4.1	4.2	4.4	4.1	4.1	(4.2) ^P	4.2	4.2	4.1 ^K	(3.6) ^B													
24									B	4.3	4.3	4.1	4.1	4.1	4.1	4.3	4.1	4.1													
25									4.4 ^H	4.1	4.1	4.1	4.1	4.1	4.2	4.1	4.3	4.0													
26									4.3	4.0	4.0	4.0	(4.1) ^S	4.1	4.1	4.1	4.1	3.8													
27									B	4.1	4.0	B	S	4.1	4.0	3.9	4.1	3.7													
28									4.1	4.0	B	4.5	(4.1) ^B	4.3	4.0	4.1	4.2	(4.2) ^B													
29																															
30																															
31																															
Median																															
Count																															

Sweep 1.0 Mc to 25.0 Mc in 0.5 min

Manual ☐ Automatic ☒

Table 48

Ionospheric Storminess at Washington, D. C.February 1950

Day	Ionospheric character*		Principal storms		Geomagnetic character**	
	00-12 GCT	12-24 GCT	Beginning GCT	End GCT	00-12 GCT	12-24 GCT
1	2	2			2	1
2	2	3			4	3
3	2	1			3	3
4	1	2			2	3
5	1	2			2	1
6	2	2			2	2
7	3	2			3	3
8	3	2			3	2
9	1	3			2	2
10	2	3			1	1
11	3	2			2	1
12	1	1			1	2
13	2	3			1	1
14	2	3			1	2
15	1	2			2	2
16	1	2			1	1
17	1	1			1	1
18	0	1			0	2
19	1	1			2	2
20	1	4	1800	----	2	5
21	4	1	----	1200	5	4
22	5	1	0100	1200	4	3
23	1	4	2100	----	3	5
24	6	1	----	1200	5	2
25	2	1			3	2
26	1	2			1	0
27	1	2			1	2
28	1	2			3	3

*Ionosphere character figure (I-figure) for ionospheric storminess at Washington, D. C., during 12-hour period, on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

**Average for 12 hours of Cheltenham, Maryland, geomagnetic K-figures on an arbitrary scale of 0 to 9, 9 representing the greatest disturbance.

----Indicate continuing storm.

Table 49

Sudden Ionosphere Disturbances Observed at Washington, D. C.February 1950

1950 Day	GCT		Location of transmitters	Relative intensity at minimum*	Other phenomena
	Beginning	End			
February					
13	1911	2105	Ohio, D. C., England	0.0	Terr.mag.pulse** 1915-1930 Solar flare*** 1910
14	1713	1905	Ohio, D. C., England	0.0	Solar flare*** 1715
17	2005	2050	Ohio, D. C., England	0.02	Solar flare*** 2004 Solar flare**** 2028
18	1357	1420	Ohio, D. C., England	0.3	
18	1513	1540	Ohio, D. C., England	0.2	Solar flare**** 1515
19	1355	1440	Ohio, D. C.	0.2	
19	1740	1755	Ohio	0.3	Solar flare*** 1736
19	1853	1910	Ohio, D. C.	0.1	Terr.mag.pulse** 1852-1905 Solar flare*** 1850
20	1254	1320	England	0.2	
20	1522	1620	Ohio, D. C., England, New Brunswick	0.0	

*Ratio of received field intensity during SID to average field intensity before and after, for station KQ2XAU (formerly W8XAL), 6080 kilocycles, 600 kilometers distant, for all SID except the following: Station GLE, 13525 kilocycles, received in New York, 5340 kilometers distant, was used for the SID on February 20 at 1254.

**As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

***Time of observation at High Altitude Observatory, Boulder, Colorado.

****Time of observation at McMath-Hulbert Observatory, Michigan.

Table 50

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,
Cable and Wireless, Ltd., as Observed in England

1950 Day	GCT		Receiving station	Location of transmitters	Other phenomena
	Beginning	End			
January 20	1105	1130	Brentwood	Afghanistan, Bahrein I., Barbados, Belgian Congo, Bulgaria, Canary Is., Chile, Greece, Iran; Kenya, Malta, Southern Rhodesia, Spain, Switzerland, Syria, Trans-Jordan, Turkey, Yugoslavia, Zanzibar	
20	1110	1130	Somerton	Argentina, Brazil, Ceylon, Gold Coast, India, Union of S. Africa	
February 13	1900	2015	Brentwood	Barbados, Chile, Colombia, Uruguay	
13	1916	2000	Somerton	Argentina, Brazil, Canada, New York	Terr.mag.pulse* 1915-1930 Solar flare** 1910

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Table 51

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,
Cable and Wireless, Ltd., as Observed at Colombo, Ceylon

1949 Day	GCT		Location of transmitters
	Beginning	End	
November 17	0945	1005	England
19	1035	1105	China, England, India, Japan

Table 52

Sudden Ionosphere Disturbances Reported by Engineer-in-Chief,
Cable and Wireless, Ltd., as Observed at Hong Kong, China

1949 Day	GCT		Location of transmitters
	Beginning	End	
November 2	0325	0340	China, French Indo-China, Japan, Philippine Is., Thailand

Table 53

Sudden Ionosphere Disturbances Reported by International Telephone and
Telegraph Corporation, as Observed at Platanos, Argentina

1950 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
January				
20	1100	1150	Belgium, Brazil, Denmark, Germany, Netherlands, New York	
20	1400	1525	Bolivia, Brazil, Chile, Cuba, Denmark, England, Germany, New York, Switzerland, Venezuela	
20	1635	1710	Belgium, Bolivia, Brazil, Chile, Colombia, Cuba, Denmark, Germany, Netherlands, New York, Spain, Venezuela	Terr.mag. pulse* 1630-1800
22	1455	1530	Bolivia, Brazil, Chile, Cuba, Denmark, England, France, Germany, New York, Peru, Switzerland, Venezuela	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

Table 54Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.as Observed at Point Reyes, California

1950 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
February				
1-2	2210	0015	Australia, China, Hawaii, Japan, Java, Philippine Is.	Terr.mag.pulse* 1915-1930 Solar flare** 1910
13	1914	2100	Australia, China, Hawaii, Japan, Philippine Is.	
17	0125	0230	Australia, China, Chosen, Hawaii, Japan, Java, Philippine Is.	
21-22	2342	0100	Australia, China, Hawaii, Japan, New York, Philippine Is.	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Table 55Sudden Ionosphere Disturbances Reported by RCA Communications, Inc.as Observed at Riverhead, New York

1950 Day	GCT		Location of transmitters	Other phenomena
	Beginning	End		
February				
13	1915	1945	Argentina, Canada, England, Italy, Morocco, Netherlands, Panama	Terr.mag.pulse* 1915-1930 Solar flare** 1910
20	1525	1550	Argentina, Canada, England, Italy, Morocco, Panama	

*As observed on Cheltenham magnetogram of the United States Coast and Geodetic Survey.

**Time of observation at the High Altitude Observatory, Boulder, Colorado.

Note: Observers are invited to send to the CRPL information on times of beginning and end of sudden ionosphere disturbances for publication as above. Address letters to the Central Radio Propagation Laboratory, National Bureau of Standards, Washington 25, D. C.

Table 56

Sudden Ionosphere Disturbances Reported by Institut für Ionosphärenforschung,
as Observed at Lindau, Harz, Germany

Day	GCT		Location of transmitters	Relative intensity at minimum*	Other phenomena
	Beginning	End			
December 1949					
9	1025	1035	München	0.19	Terr.mag.pulse** 1252-1305
10	0901	0915	München	0.18	
12	1253	1330	München	0.18	
13	1005	1020	München	0.16	
20	0755	0805	München	0.3	
January 1950					
11	0910	0925	München***	0.26	
20	1103	1125	München, Berlin****	0.04	

*Ratio of received field intensity during SID to average field intensity before and after, for station Voice of America, 6078.9 kilocycles, 400 km distant.

**As observed at Wingst near Hamburg and at Lindau.

***Station Voice of America, 6078.9 kilocycles.

****Station DAB 3840 kilocycles, 200 km distant.

Table 57

Provisional Radio Propagation Quality Figures
(including Comparisons with CRPL Warnings and Forecasts)
January 1950

	North Atlantic quality figure	CRPL* Warning	CRPL Forecast (J-reports)	North Pacific quality figure	Geo- mag- netic K _{Ch}
Day	Half day GCT (1) (2)	Half day GCT (1) (2)		Half day GCT (1) (2)	Half day GCT (1) (2)
1	7 7			6 6	2 2
2	7 6			6 7	2 0
3	6 6			6 7	1 1
4	7 7			6 7	2 2
5	7 6			6 6	2 1
6	7 6			5 6	2 2
7	6 6			5 6	2 2
8	6 7			5 6	1 0
9	7 6			6 7	2 2
10	7 7			6 7	2 2
11	6 6			6 7	2 2
12	7 6			6 7	2 1
13	6 6			6 7	2 2
14	5 6			6 7	3 3
15	6 6			5 7	1 2
16	6 6			5 7	3 2
17	5 7			6 6	1 1
18	6 7			6 6	1 1
19	6 7			6 7	2 2
20	5 5	U W		6 5	3 2
21	5 5	W	X	5 6	3 3
22	6 6			5 7	2 1
23	6 6			8 7	3 2
24	6 6	U (W)		7 6	3 (4)
25	5 6	W W		6 5	(4) 2
26	6 6	U		6 7	2 2
27	6 5			6 6	2 2
28	6 5			6 7	2 1
29	6 6			6 6	1 1
30	6 6	U		6 6	(4) 2
31	6 6			6 7	1 2
Score:		Warning N.A. N.P.	Forecast N.A. N.P.		
H		1 0	0 0		
(M)		0 0	0 0		
M		0 0	0 0		
G		53 53	60 60		
O		8 9	2 2		

Scales:

Quality Figures

- (1)- Useless
 (2)- Very poor
 (3)- Poor
 (4)- Poor to fair
 5 - Fair
 6 - Fair to good
 7 - Good
 8 - Very good
 9 - Excellent

Geomagnetic K_{Ch} - 0 to 9,
 9 representing the greatest
 disturbance; K_{Ch} > 4 indicates
 significant disturbance,
 enclosed in () for emphasis.

Symbols:

W Disturbed conditions
 expected

U Unstable conditions
 expected

N No disturbance expected

X Probable disturbed date

Scoring:

H Storm (Q < 4) hit

(M) Storm severer than
 predicted

M Storm missed

G Good day forecast

O Overwarning

Scoring by half day according
 to following table:

	Quality Figure			
	<3	4	5	>6
W	H	H	O	O
U	(M)	H	H	O
N	M	M	G	G
X	H	H	O	O

*Broadcast on WWV, Washington, D.C. Times of warnings recorded to nearest half day as broadcast. () broadcast for one-quarter day. Blanks signify N.

Table 58a

Coronal observations at Climax, Colorado (5303A), east limb

Date GCT	Degrees north of the solar equator																			0°	Degrees south of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		
1950																																							
Feb. 1.7	-	2	-	-	-	-	-	-	-	-	-	4	11	11	15	19	17	14	16	17	15	13	13	11	6	4	2	2	-	-	-	-	-	-	-	-	-		
2.7	1	-	-	-	-	-	-	-	-	-	5	12	15	15	17	24	26	21	20	20	16	13	13	11	9	6	4	3	2	2	3	1	1	2	1	-	-		
3.8	1	-	-	-	-	-	-	-	-	2	9	13	16	26	21	22	21	19	15	12	11	11	10	9	5	3	1	1	-	-	-	-	-	-	-	-	3		
8.8	-	-	-	-	-	2	1	3	8	9	8	11	11	11	12	17	17	15	13	13	18	14	13	10	8	6	4	4	3	3	2	3	3	2	2	1	-	-	
9.8	-	-	-	3	2	2	3	5	7	9	13	9	8	11	20	30	20	16	19	19	21	30	16	11	7	9	9	9	9	9	6	8	8	8	8	4	1		
10.7	-	1	1	2	2	4	4	5	9	11	9	6	11	13	26	33	28	18	19	16	20	35	22	9	5	8	9	5	6	4	7	9	9	9	4	2	2		
*13.7	-	-	-	4	3	5	6	7	7	8	7	9	10	13	24	24	26	26	22	15	13	9	7	6	4	4	3	2	-	-	-	-	-	-	-	-	-		
15.9a	X	X	X	-	-	-	-	-	-	-	-	3	7	10	10	11	7	6	4	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.8	-	-	-	-	-	-	-	-	-	-	2	8	9	12	13	12	7	5	3	3	2	2	2	1	-	-	-	-	-	-	-	-	-	-	-	-	-		
17.9a	X	X	-	-	-	-	-	-	-	3	4	5	7	15	26	20	15	14	15	14	12	8	9	9	7	6	4	3	3	-	-	X	X	X	X	X	X		
18.8	-	-	1	3	4	5	4	5	8	9	11	14	20	33	37	24	17	20	18	16	14	11	12	11	9	9	7	5	5	3	1	1	1	1	-	-	-		
19.7	-	-	2	3	4	3	4	5	5	11	14	14	15	20	20	15	13	15	14	11	12	11	9	12	9	5	4	7	3	4	-	-	-	-	-	-	-		
25.7	-	-	-	3	2	-	-	-	-	4	6	6	10	14	17	17	22	13	13	10	14	14	13	7	6	4	2	-	-	-	-	-	-	-	-	-	-	-	
26.8	2	-	-	-	-	-	-	-	-	3	4	8	9	10	13	18	15	14	11	9	11	14	14	11	7	5	-	-	-	-	-	-	-	-	-	-	-	-	

Table 59a

Coronal observations at Climax, Colorado (6374A), east limb

Date GCT	Degrees north of the solar equator																			0°	Degrees south of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		
1950																																							
Feb. 1.7	2	2	3	3	4	4	4	3	3	2	1	1	-	-	-	9	3	7	3	5	3	1	2	2	1	1	2	2	2	1	1	-	1	-	-	1	-		
2.7	2	2	2	3	6	4	4	3	2	2	3	4	4	1	1	9	10	12	10	7	4	-	8	2	2	1	2	2	4	5	2	2	2	3	4	2	-		
3.8	2	1	1	2	4	4	2	2	2	2	3	1	-	8	12	20	5	3	3	4	-	5	3	2	-	1	1	1	1	2	2	-	-	-	-	-	-		
8.8	3	2	3	3	3	2	1	1	-	-	-	3	3	5	10	23	13	-	-	3	3	-	3	3	2	-	-	-	-	-	-	-	-	2	2	-	-		
9.8	3	4	3	3	3	2	2	1	-	-	-	1	2	7	14	14	5	3	2	3	5	14	2	-	-	-	-	-	-	-	-	-	-	1	2	2	-		
10.7	2	2	3	4	3	3	4	3	1	-	2	2	4	13	26	19	13	8	3	4	14	3	2	2	2	-	-	-	-	-	-	-	1	1	3	2	-		
*13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	11	19	16	11	10	6	4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
15.9a	X	X	X	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	-	-	-	-	-	-	-	-	-	-	-	-	-		
16.8	-	-	-	-	-	-	-	-	-	-	-	-	3	4	2	2	8	3	-	-	-	-	-	-	2	3	-	-	-	-	-	-	-	-	-	-	-		
17.9a	X	X	-	-	-	-	-	-	-	-	-	-	-	4	3	9	3	4	1	5	1	-	-	-	-	-	2	3	-	-	-	X	X	X	X	X			
18.8	1	1	2	2	2	2	-	-	-	-	-	3	2	3	19	9	5	10	12	5	-	-	-	-	-	-	-	-	3	3	1	1	1	-	-	-	1		
19.7	1	1	-	-	-	-	-	-	-	-	-	-	-	3	4	9	8	12	13	3	4	1	1	-	-	-	-	-	-	-	-	1	1	1	2	2	-		
25.7	1	2	2	3	-	-	-	-	-	-	-	-	-	-	2	2	7	-	-	-	11	-	4	9	3	4	2	2	2	1	1	1	1	1	2	2	-		
26.8	-	-	-	2	2	3	2	1	1	-	-	-	-	-	-	-	-	2	-	1	-	2	14	9	6	2	1	2	2	2	1	3	1	2	-	-	-		

Table 60a

Coronal observations at Climax, Colorado (6704A), east limb

Date GCT	Degrees north of the solar equator																	0°	Degrees south of the solar equator																			
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10		5	5	10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90	
1950																																						
Feb. 1.7	-	-	-	-	1	1	-	-	-	-	-	-	1	1	1	1	2	2	-	1	1	2	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	1
2.7	-	-	-	-	-	-	-	-	-	-	-	-	-	1	2	1	1	-	2	1	1	-	1	1	1	2	-	-	-	-	-	-	-	-	-	-	-	
3.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	3	2	1	1	1	1	-	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	
8.8	-	-	-	-	-	-	-	-	-	1	1	1	1	X	2	2	-	1	1	2	2	2	2	2	2	2	2	2	2	2	2	2	1	1	-	-	-	
9.8	2	1	-	-	-	-	-	-	-	-	-	-	-	1	1	5	3	2	2	3	2	3	2	2	2	2	1	1	1	2	1	-	1	1	-	-		
10.7	-	-	-	-	-	-	-	-	1	1	1	1	1	2	2	2	2	2	3	3	3	4	3	2	2	1	-	-	-	-	-	-	-	1	1	1	1	
*13.7 ^a	-	-	-	1	2	-	-	2	1	1	1	1	2	2	2	3	4	5	6	7	1	1	1	2	-	1	1	-	1	-	-	-	-	-	-	-	-	
15.9 ^a	X	X	X	1	2	1	1	2	2	2	2	2	3	3	2	3	2	2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	2	1	2	
16.8	-	-	-	1	-	1	1	1	1	1	1	1	2	2	3	3	2	1	2	2	1	2	1	1	-	1	1	-	1	1	-	-	1	1	1	1	1	
17.9 ^a	X	X	-	2	2	2	1	-	1	-	-	2	2	3	4	3	3	2	2	2	2	2	2	2	2	2	2	2	2	1	1	1	X	X	X	X	X	
18.8	-	-	1	-	-	-	-	-	1	1	1	2	3	4	4	4	2	2	2	2	2	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-		
19.7	-	1	1	-	-	-	-	-	1	1	3	3	4	4	4	3	3	3	2	2	2	2	1	1	2	1	2	-	-	-	-	-	1	1	1	1	-	
25.7	1	1	1	1	1	1	1	1	1	-	-	-	1	2	4	2	4	2	2	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	2	1	
26.8	-	1	1	2	-	-	-	-	-	-	-	-	1	2	3	3	3	2	2	1	1	4	2	2	2	2	1	1	1	2	1	1	1	1	1	1	2	2

*Intensity of yellow line (5694A) east limb:
Feb. 13.7 — 5 at N10°, 3 at N5°, 2 at 0°.

Table 58b

Coronal observations at Climax, Colorado (5303A), west limb

Date GCT	Degrees south of the solar equator																			0°	Degrees north of the solar equator																		
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90		
1950																																							
Feb. 1.7	-	-	1	2	2	4	5	5	8	7	5	9	10	8	9	14	15	10	13	14	23	32	34	33	20	16	17	17	10	9	8	8	5	5	4	2	-		
**2.7	-	-	-	2	4	4	3	6	8	9	7	9	11	10	11	16	17	20	18	21	35	38	33	22	24	22	16	14	12	11	10	9	8	8	7	3	1		
**3.8	3	2	2	3	4	4	4	5	6	6	8	9	9	10	11	14	16	15	15	16	28	32	38	35	32	25	23	15	13	10	8	9	4	4	3	1	1		
8.8	-	-	-	-	1	3	4	5	9	11	9	11	13	16	24	23	24	17	14	15	21	22	22	19	15	15	13	11	4	3	1	1	-	-	-	-	-		
9.8	1	2	1	1	-	-	1	3	4	6	7	9	9	11	15	16	18	16	17	18	20	20	21	16	15	13	11	8	4	4	1	-	-	-	-	-	-		
10.7	2	-	-	-	1	1	1	2	3	3	4	4	5	10	18	18	17	16	14	16	21	23	22	15	15	14	9	4	2	-	-	-	-	-	-	-	-		
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	2	3	7	7	9	8	8	11	13	12	11	8	6	6	4	1	-	-	-	-	-	-	-	-	-		
15.9a	-	-	-	-	-	-	-	-	-	-	-	-	-	2	1	-	3	2	2	4	8	5	4	5	2	2	1	-	-	-	-	-	-	-	X	X	X	X	
16.8	-	-	-	-	-	-	-	-	-	-	-	-	3	4	4	4	7	9	8	8	8	8	6	8	7	4	2	-	-	-	-	-	-	-	-	-	-		
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
18.8	-	-	-	-	-	-	-	1	2	4	5	6	10	13	16	17	19	18	15	16	20	23	20	12	9	4	2	-	-	-	-	-	-	-	-	-	-	-	
19.7	-	-	-	-	-	-	-	-	-	-	-	3	4	9	10	14	14	15	12	12	13	16	16	16	11	9	5	2	2	2	2	2	2	2	2	2	2	2	
25.7	-	-	-	-	-	-	-	-	-	-	-	4	3	8	9	9	8	10	14	15	18	19	17	15	13	10	7	6	5	3	2	2	2	2	2	2	2		
26.8	-	-	-	-	-	3	4	6	2	3	2	1	4	4	6	8	11	14	13	14	15	16	19	19	15	13	7	5	6	8	5	3	-	4	3	3	2		

Table 59b

Coronal observations at Climax, Colorado (6374A), west limb

Date GCT	Degrees south of the solar equator																			0°	Degrees north of the solar equator																			
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90			
1950																																								
Feb. 1.7	-	-	2	2	2	1	-	-	-	-	-	-	-	-	1	1	3	3	4	9	17	22	10	9	10	4	9	-	-	-	-	2	-	2	2	2	2	2		
**2.7	-	2	2	2	3	3	-	-	-	-	-	1	3	2	2	3	2	3	1	-	16	18	15	21	9	4	1	2	-	1	-	-	-	2	4	3	2	2		
**3.8	-	-	-	-	-	-	1	2	2	-	-	-	-	-	3	2	2	4	7	4	21	15	20	26	15	8	5	1	-	-	-	-	-	-	1	2	2	2		
8.8	-	-	-	-	-	1	2	3	-	-	-	-	-	-	2	2	9	9	2	3	4	6	-	2	2	2	1	1	3	3	2	2	3	3	2	3	2	3		
9.8	2	3	2	2	3	2	3	3	2	2	1	1	1	3	4	10	7	2	2	4	3	-	-	1	1	2	2	1	2	3	2	2	3	2	2	3	3	3		
10.7	2	2	2	3	3	2	3	3	3	4	2	2	2	9	11	13	-	-	-	-	-	-	2	1	-	2	2	2	3	2	2	3	1	2	2	2	2			
13.7 ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
15.9 ^a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	X	X	X	X			
16.8	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
18.8	1	1	1	1	2	2	2	2	-	-	-	-	-	-	4	7	5	3	4	5	4	19	8	4	3	1	1	1	1	1	1	1	1	1	1	1	1	1		
19.7	2	2	2	2	1	1	-	-	-	-	-	-	-	-	-	5	5	4	2	2	1	4	4	5	3	2	2	1	1	1	1	3	2	2	2	2	1	1		
25.7	2	1	1	1	1	2	2	-	-	-	-	-	-	5	10	5	-	5	-	4	8	10	10	8	4	5	2	-	1	1	-	-	-	2	1	2	2	1		
26.8	-	-	-	-	1	1	1	1	-	-	-	1	3	2	-	2	2	-	1	3	20	10	11	4	3	1	1	-	-	-	-	-	-	-	-	-	-	-		

Table 60b

Coronal observations at Climax, Colorado (6704A), west limb

Date GCT	Degrees south of the solar equator																			0°	Degrees north of the solar equator																			
	90	85	80	75	70	65	60	55	50	45	40	35	30	25	20	15	10	5	5		10	15	20	25	30	35	40	45	50	55	60	65	70	75	80	85	90			
1950																																								
Feb. 1.7	1	-	1	-	-	-	-	-	-	-	-	-	-	-	1	3	2	3	1	3	5	5	3	2	2	1	1	2	1	1	1	1	1	1	1	1	1	-		
**2.7	-	-	-	1	1	-	-	1	1	1	-	-	-	1	2	2	2	2	2	2	3	4	4	3	4	4	3	2	2	1	-	-	-	-	-	-	-	-		
**3.8	-	-	-	-	-	-	-	-	-	-	-	-	1	1	2	1	1	2	2	1	-	3	7	8	9	4	3	2	1	1	1	2	-	-	-	-	-	-		
8.8	-	-	-	-	-	-	1	1	-	-	-	-	1	1	2	2	1	2	2	2	2	3	2	3	3	3	2	1	2	1	1	1	1	2	1	1	-	-		
9.8	-	-	-	-	-	1	1	-	-	-	-	-	-	1	2	2	2	2	3	3	2	2	3	2	2	2	2	1	1	1	-	-	-	-	-	1	2			
10.7	1	1	1	1	1	-	-	-	-	-	-	-	-	-	2	2	2	2	2	2	3	2	4	3	4	2	1	1	-	-	-	-	-	-	-	-	-			
13.7a	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-			
15.9a	2	2	2	2	2	-	-	-	-	-	-	-	-	-	1	2	1	-	-	-	-	-	1	-	-	-	-	-	-	-	-	-	-	X	X	X	X			
16.8	1	1	1	1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2	3	3	-	-	-	-	-	-	-	-	-	-	-	-			
17.9	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
18.8	-	-	-	-	-	-	-	-	-	-	1	1	1	1	1	1	1	1	1	1	1	1	1	2	1	1	1	1	1	-	-	-	-	-	-	-	-			
19.7	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3	3	2	2	1	-	1	2	2	2	1	1	1	-	-	-	-	-	-	-	-	-			
25.7	1	1	1	1	1	1	1	-	-	-	-	-	-	-	-	-	1	1	3	4	3	2	-	3	1	2	2	2	2	2	2	1	1	1	-	1	2	1		
26.8	2	2	2	3	2	2	2	1	-	-	-	1	1	1	2	2	2	2	2	2	3	3	3	4	4	3	3	3	1	-	-	-	1	1	2	-	1	-		

**Intensity of yellow line (5694A) west limb:

Feb. 2.7 -- 3 at N15°, 4 at N20°, 2 at N25°, 1 at N30°

Feb. 2.9 -- 18 at N20°, 2 at N25°, 2 at N30°

Table 61

American and Zurich Provisional Relative Sunspot Numbers

February 1950

Date	R _A *	R _Z **	Date	R _A *	R _Z **
1	63	70	16	198	156
2	29	34	17	219	154
3	32	37	18	221	166
4	42	35	19	214	197
5	42	63	20	206	190
6	36	51	21	225	170
7	36	31	22	202	162
8	30	19	23	162	137
9	33	20	24	145	113
10	51	37	25	113	96
11	76	66	26	94	76
12	95	72	27	103	70
13	120	85	28	104	72
14	195	125			
15	202	144	Mean:	117.4	94.6

*Combination of reports from 44 observers; see page 9.

**Dependent on observations at Zurich Observatory and its stations at Locarno and Arosa.

Preliminary values of mean K-indices, Kw, from 34 Observatories;

Preliminary values of International Character-Figures, C;

Geomagnetic planetary three-hour-range indices, Kp;

Final magnetically selected days for January 1950

Gr. Day 1950	Values Kw								Sum	C	Values Kp		Sum	Final Sel. Days
1	2.6	1.6	2.0	1.3	1.2	2.6	2.1	1.8	15.2	0.6	3o2o2+1o	1o2+2o2-	15+	Five Quiet
2	2.8	2.8	2.1	1.3	0.5	0.7	0.9	0.9	12.0	0.4	3o3+2+1+	0+1-1-1-	12+	
3	1.5	1.0	0.9	1.9	2.3	0.7	0.9	2.8	12.0	0.5	2-1+1o2-	2+1-1-3-	12o	
4	1.8	1.0	2.2	1.9	1.9	2.5	3.3	2.6	17.2	0.8	2o1o3-2o	2o3-3o3-	18o	
5	1.4	1.6	1.9	2.0	2.1	1.9	1.7	1.6	14.2	0.3	2-2-2o2+	2o2o1+1+	14+	
6	1.8	2.7	1.1	1.8	2.4	3.1	2.8	2.3	18.0	0.7	2o4-1+2o	3-3o3-2+	20-	17
7	2.6	2.2	1.9	2.0	2.9	2.3	3.0	1.2	18.1	0.7	3o3-2o3-	3o2o3-1-	19-	18
8	0.9	0.9	0.4	0.7	0.6	0.5	0.8	1.4	6.2	0.0	1+1o0+0+	0+0+1-1o	5+	29
9	2.8	3.2	2.4	1.8	2.2	0.7	1.6	1.4	16.1	0.7	3+4o3o2-	2o0+2-2o	18o	
10	2.9	2.3	1.9	1.9	1.4	1.3	2.0	3.1	16.8	0.7	3+3-2o2-	1o1+2-3+	17o	
11	2.4	1.5	1.2	1.7	1.6	1.9	1.8	3.3	15.4	0.6	3-2o1+1-	1+2o2-4-	16+	Five Dist.
12	2.1	1.8	1.0	0.9	1.4	2.2	2.8	1.9	14.1	0.4	2+2o1-1o	1o2o3-2-	13+	
13	2.4	1.6	1.4	1.6	2.5	3.0	2.6	2.1	17.2	0.7	3o2o2-2-	2+3-3-2-	18-	
14	2.4	3.7	2.8	3.7	3.3	3.1	4.3	2.8	26.1	1.2	3-4+3+4-	3+3o4+3o	28-	
15	0.5	0.5	1.5	3.1	3.1	2.7	2.5	1.9	15.8	0.7	0+0+2-4o	4-3-3-2o	17+	
16	1.1	2.4	2.9	1.9	1.4	1.9	2.1	3.1	16.8	0.7	1o3+4-2+	1+2-2o3o	18+	24
17	1.6	0.4	0.7	1.5	1.4	1.0	2.5	1.9	11.0	0.3	2-0+0+2-	1+1+2+2o	11o	25
18	1.7	2.6	1.5	1.2	1.0	0.2	0.9	2.4	11.5	0.3	2-3+1+1o	1o0o1-2+	11+	
19	1.1	1.7	2.5	2.9	2.4	2.2	3.3	3.4	19.5	0.9	1o2-3o3+	3-2o3o3+	20o	
20	3.6	3.1	3.5	2.9	3.7	4.1	2.4	1.6	24.9	1.2	4o4o4+4-	4o4o2+1+	28-	
21	2.8	2.5	2.5	3.5	3.1	3.8	3.6	2.4	24.2	1.1	3+3+3o4+	3+4-3+2+	27-	Ten Quiet
22	2.9	3.2	1.9	2.2	1.4	2.1	1.3	1.3	16.3	0.6	3+4o2o2+	1+2o1o1o	17o	
23	1.5	0.9	2.5	1.6	1.2	1.0	1.8	2.5	13.0	0.4	2-1o3-2-	1-1o2-2o	12+	
24	2.7	2.5	2.2	2.9	4.0	6.4	5.8	5.2	31.7	1.7	3-3o3-3o	4o7-6o6-	34-	
25	3.6	3.6	3.9	3.6	3.2	3.4	2.5	3.3	27.1	1.3	4o4o5-4+	4-3+2+4-	30o	
26	1.6	2.6	1.7	1.9	2.9	3.3	2.6	2.8	19.4	0.8	2o3+2o2o	3o3o3-3-	21-	8
27	2.6	2.9	1.4	2.2	2.6	3.0	3.3	3.3	21.3	0.9	3o3+1+3-	3o3o3o4-	23o	12
28	3.2	2.3	2.0	2.4	2.3	3.5	2.2	1.3	19.2	0.8	4-3-2+3-	2+3+2o1o	20o	17
29	2.1	1.6	1.1	0.8	0.8	1.7	2.0	2.0	12.1	0.2	2+3o1+1-	1-1+2-2-	12-	18
30	2.9	2.5	3.2	2.6	0.9	3.1	4.1	2.5	21.8	1.0	3o3+4+3-	1o3o4o3-	24o	23
31	1.2	0.9	1.2	0.9	1.1	1.4	1.9	2.8	11.4	0.4	1o1o2-1-	1-1+2-3-	11-	29
Mean	2.16	1.92	2.03	2.43	2.16	2.07	2.02	2.30	2.15	0.70				31

	January 1940									February 1940									March 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	2+2+2-20				2+203-3+				19-	5-405-4+				5-50505-				370	10303-20				201+100+			13+	
2	4-403-20				3-1+1-3+				21-	40304030				30303+3-				260	1+2-101+				1-1+101+			10-	
3	204-4-3+				5+8-5040				35-	3012+2-3-				3+4+3+4-				240	2-2+202-				102-2-3-			15-	
4	302+203+				4+504+4+				29-	1-10101-				1-402+3-				130	0+1-0+0+				2-0+1-2+			7-	
5	3-502-10				0+10203-				16+	3-101+2+				3+302-3+				19-	1+2-1+1+				1000+0+			7+	
6	3+4-3-3+				3+404+30				28-	302-2+3-				30204-4-				220	00+0+0+				0+10101+			5-	
7	4-203-2+				40303050				26-	4+2+2020				3+2+2+20				21-	1+20+1-				1+0+101+			8+	
8	304+301-				20203030				20-	303-2+3-				1+2-303-				19+	2+3-2+1+				100+3+4+			18-	
9	201-1+2-				3-3+5-2+				19-	304-202-				102-0+2+				16-	5+6+4-2+				202+2+20			26-	
10	202+1+2+				6-5+5-40				28-	202-101-				1-2-3-3-				130	2020202-				1+101+10			12-	
11	30404-4-				3-305-4+				290	201-1+2+				2+1+303+				16+	101-0+0+				1-101-0+			50	
12	3+4+5030				4-4-4-5-				31+	3+402+2+				4-402+2-				24-	00+0+1-				1-3+4050			14+	
13	2+303-20				2+10100+				140	3-20201+				301+3+2+				180	4-302+2+				2-201-2+			180	
14	00000+2-				1-1-1+2-				6+	202-103-				200+1-1+				12-	2-303+30				102-2+20			180	
15	3+3-1-1+				1+1-1-1+				120	3-102030				30102-10				15+	0+00001-				1-000000			2-	
16	2-203+2+				3+303+2+				21+	20201+2+				1+3-2+20				160	1-1-2-10				1+1-3-20			11-	
17	3+3+3+20				504-4-3+				28-	0+102-2+				2-201-0+				100	1+0+1-1-				00000000			30	
18	3-3+3+4-				5-7-003-				32+	001-1-0+				001-100+				4-	000+0+00				0000+0+			1+	
19	301+2-20				202+202-				160	0+0+0010				0+1-1-1+				5-	2-3-303-				3-5-5-4-			26-	
20	10202-1+				2+2+3-1+				15-	504+4-20				3-303+3-				27-	5-4+4-40				403+4040			320	
21	1-0+1-10				101+1-0+				60	4+403-30				4-4-2-2-				25-	3+4-201+				202+202+			190	
22	0+101020				103+301+				130	3+3+402+				2+2-2-2+				22-	3+3-2-1+				10105+30			17+	
23	0+0+20+				20102+2+				13-	2+302+1+				2-10304-				18+	103-5060				404+507+			35+	
24	3-5+2+2+				3-304030				23+	4+30303-				2+3-2+4-				240	6+60504+				8090908+			560	
25	3+4-3+2-				403-1+20				220	4+4+5-5-				50505-3-				35+	9-8+8+80				705-7-80			60-	
26	0+00000+				0+1-1+2-				5-	20101+10				2-2+4-2+				15+	7+605-3-				2+4-6+3-			36-	
27	2-2+3-1-				1-101-10				11-	204-2-1+				200+1-1-				12+	5+505+4+				3-4-5+4+			320	
28	1+0+1-00				00+1-1+				5-	10201020				1+101+3-				12+	5+403030				302+3030			27-	
29	1+101-10				3-4-5+3-				16+	2-3-3-3-				304-2+1+				200	3-2-2+50				508+808+			41+	
30	4-4-304-				303+3+30				27-										9-8+8+80				7+8-706-			610	
31	303+4-3+				5-4+505-				320										705+5-8+				808-606+			53+	

	April 1940									May 1940									June 1940								
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum
1	7-6+6-7-				4+505-4-				430	20102-10				2020302-				14+	1-0+1+1-				101-1+2-			8-	
2	2+2+202-				203+7060				27-	2-2+1+1-				1-2-1-0+				9+	1+3-2010				3-3-1+20			16-	
3	8080705-				5-506+4-				47+	2-1+2+1+				1+1-1-10				10+	1-1-1-10				30202-20			12-	
4	3+2+304-				3-303030				240	2+102-0+				0+1-0+2-				8+	201-0+0+				101-0+1-			60	
5	3-3+2020				102+2+20				18-	2-1+2-20				1+1-2-10				11+	10103-20				202-2040			16+	
6	3+3+2+1+				1-0+3-10				150	0+0+0+00				0+0+0000				2-	4+5+505-				4+4-4-4+			35+	
7	1-000+0+				100+2-1-				50	102+2+1+				101+1+10				12-	505+404+				403-3+5-			33+	
8	0+0+1010				1-2-1-0+				60	2-200+0+				1+1-1-10				80	4+30503-				3-304+4-			27-	
9	10+0+1-				0+1-0+0+				40	2+4-2-2-				303-1+1+				18-	2-303+4-				20304-30			23+	
10	1-0+0+0+				0+00+0+0				3-	103-3-3-				3-304-4-				220	302-3-1-				1-001-2-			110	
11	0+1-1-1+				2+2+1-1-				90	4-4-3020				3-203020				220	2-0+1-10				101+0+2-			80	
12	1-1+101+				101-0+1-				70	304-402+				3-3-3-4-				25-	100+0+1-				2-1+202-			90	
13	2+3-2030				3+3+2+1+				20-	302+2-2-				2+2+4-3-				20-	0+0+0+0+				1-101+2+			7-	
14	2-3+4-3-				203-1+2-				190	303+3+2+				3-3-2+20				22-	102+3+3-				5-606-6+			320	
15	203-3-30				404+3030				25-	2-3+3-2+				3-3+4-3+				230	5-504+40				4-4-5-1+			29+	
16	3+40302+				2-2-3030				220	3+1-001-				10101+1+				9+	4-2+4-30				202-303-			220	
17	303+3-10				101+1+1-				14+	202+203-				2-2+3+2+				19-	303+3+30				303+3-20			24-	
18	1+1+2-1-				100+0+1+				80	405-6-5-				6-303-20				32+	2040503+				201+2+2-			22-	
19	2+201+1-				2-3-1+0+				12+	3+2-2+2+				102+2-30				18-	2030302+				3+301+2-			20-	
20	0+2+3-2-				3-2+3-20				17+	202+1+1+				3+4-2+0+				17-	101+1-1-				1010101-			7+	
21	4-303-2+				2-2-203+				20+	1+4+100+				0+102020				12+	1+201+10				100+1-0+			80	
22	30405-3-				3040201+				25-	4+6-6-5-				303-2+2-				300	0+100+3+				3+201+2+			140	
23	30101-0+				3010203-				14-	2-2+2-2-				1-505+3-				210	4-2-1010				10102020			13+	
24	4-101-2-				302+1010				14+	30706-8-				6+5-6+4-				44+	3+3+3+20				302+4-4-			25-	
25	5-80402-				2+507-7-				390	4030101-				1+3+302+				19-	5-705+7+				8+8-7+5+			530	
26	705+5-3+				4-4-5-3+				36-	3-403+3-				2+404+5+				29-	5-3+2+2+				106-4+3+			270	
27	4-3-202-				2+3-202-				19-	6-402+3-				1+2+3-40				250	3-2+2-2+				2+2+101-			15+	
28	3-1+1+20				2+3-1+3-				16+	3-4+3+3+				302+2+2+				24-	2+1-0+10				1-302+1-			110	
29	403+2+2-				202-1+1-				170	30202-1+				1+2+2+1+				15+	0+1+1-0+				1+10302-			10-	
30	1-2-2-30				30303+3-				190	0+00+1+				1-1-1+2-				6-	4+4-1-1+				203-2+2-			19-	
31										1+1-1-0+				1-0+000+				4+									

Table 63. -- Geomagnetic planetary three-hour-range indices Kp (continued)

July 1940										August 1940										September 1940									
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum		
1	4-2+101-				1+102+0+				13-	4+3-1-1+				102-2030				17-	404-4-40				504-2-1-				26+		
2	1-1-1-1-				1-101+10				7-	101-1+2-				1+205+20				15+	0+1+203-				3-303+3-				180		
3	2-203-2-				3-2+3+50				21+	203+4+4+				6+6-4-2+				320	40404-3+				4-4-3+4-				29+		
4	5-4-4-30				203-3050				28-	3+20302+				1-1+201+				160	4+3-3-4-				202+2+4-				24-		
5	402+3020				3+204-4-				240	203-1030				302+2+3+				20-	3+3+2+3-				20203-1+				20-		
6	3+303-20				3+2+3+2+				22+	303-3+30				3-304-40				25+	2+2+2-2+				2+1+1030				16+		
7	2-1-1+1+				2+202+1+				130	2+1+2+3+				30404-10				210	4+5+5-40				3+4-1+4+				31+		
8	1+100+0+				1+10103+				10-	302+3+30				2+1+1-20				180	3+2+2040				4-4-2-20				23-		
9	3-3+3-2-				303-3+3+				23-	20304+5+				5-4+6+40				340	4-405-30				2+304-30				25+		
10	404+504+				403+3-40				32-	20102+3-				2+301+10				16-	2-1+1000				00000+1-				50		
11	304-2+2-				1+1+2-20				170	303-303+				303+4-3+				25+	0+000+1+				1+2-101-				7-		
12	202+1010				1-1-2-1-				100	2+3+3020				203-2-20				190	1+1-1010				101-101-				7+		
13	1+2-3-7-				8-605-4+				350	3-2+202-				1+2-101+				140	0+0+0+0+				1+201+0+				6+		
14	3+5-404-				303+2+30				27+	1+3-3-2+				2+101-2-				15-	203-101-				20305+3+				200		
15	3+3+2+20				3+30302+				23-	1+0+100+				1-0+0+0+				5-	1+4-302+				3-2+301+				20-		
16	3-2+2020				2-2+2-20				17-	0+0+200+				0+0+100+				50	102+2010				404+201-				17+		
17	2-1+1+1-				102-0+0+				8+	1-0+0+0+				0+1-101+				50	0+0+0+10				0+0+2-1+				5-		
18	0+1-001-				0+000+1+				4-	1-0+101+				2+404-4-				170	0+0+101-				0+1-2-1+				6+		
19	1+100+0+				10102-2+				90	2-0+1010				2+3+303-				15+	1+1-1-1-				100+0+0+				5+		
20	1010100+				1-1-2-20				8+	304-3-2+				2+2+2010				19+	0+102-2+				4-3+2+2+				170		
21	20102-30				202+2+3-				170	20201-2-				2+1+1+20				13+	2+2+3-40				4-301+1+				21-		
22	2-305-3-				303-2+20				220	2+101+2-				2-3+3+2-				16+	0+0+2-30				302-2+1+				14-		
23	2+2-1010				202-1+2+				13+	2+201+1-				101-2010				110	1-0000+				100+0+1-				3+		
24	203+3-30				2-201+3-				19-	0+000+0+				0+0+0+00				20	1-1+000+				000+103-				6+		
25	3-3-303-				1+20101+				17-	00000000				1-102+3-				7-	30404-4-				5-404-40				29-		
26	3-201+10				10100+0+				10-	2+2+103-				302+406-				23+	2-000+1-				1-7-8-50				23-		
27	1-1-1-0+				1-101-1-				5+	4-4+3-20				1+3-2-3-				21-	7-6-3+30				304+5+50				36+		
28	2-101+3-				2-101-1+				11+	304-3-20				201+2020				19-	4+6-6+5-				4-505030				370		
29	10201010				1+1+403+				150	3+2-202+				3+10101+				160	3-3-202+				30203-2-				190		
30	2+3+2+3-				4-4-5-30				26-	1+0+001-				10102020				8+	2-1-0+0+				101+4030				12+		
31	4-3+3+3+				3-2+3+3-				25-	2010101+				2-1+1+4-				13+											

October 1940										November 1940										December 1940									
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum		
1	4+4+303+				4+5+7020				34-	1+304+4-				3-1+2-00				180	2+4-3-30				2+20303+				22+		
2	201+3-3-				3+403-3-				21+	1-2+3+2+				100+0010				110	4-4-3-50				3+403+4+				300		
3	2-3+4030				303+5-3-				26-	3-3+3+4-				3-2-2020				21+	4-2+1+40				3+4-2+40				25-		
4	4+40101-				1020101-				15-	3-4-3+20				4+5-4+40				290	20303-2+				3+3+3+1+				21+		
5	3-3+2-1+				2+2-1-0+				140	4-4+4-4-				3-2-3-10				23+	3-3+3-2-				1+1+202-				17-		
6	1+1+1+3-				3+3+2-40				190	3-3-2+2+				1+1+201+				160	2020102-				0+102-10				11-		
7	404+6-5-				6-5+706-				42+	2-2+304-				301-1-10				160	2-1-1-1-				000+0000				40		
8	5+7-6-40				30405-50				38+	2-1+1+10				101-1-1-				8+	00000000				000+1-00				10		
9	402-1+20				101-2-1+				14-	10303+2+				4-30201+				20-	1+3-3+30				4-2-1+2+				19+		
10	000+102+				2+10303-				13-	101+1-1-				00000+0+				4+	2-3+2-2+				1+4-3-20				19-		
11	3-302-10				2+1+1-3-				15+	0+001-00				000+0020				3+	2-2-2-2-				0+2-2-40				14+		
12	3+2+1+3-				20201+30				180	2+0+2+5-				3+3+405+				26-	3+203-20				2+3+2020				20-		
13	1+10100+				100+0+0+				6-	7-7-6+3+				4-3+2+20				34+	403-203+				1+2-2+2-				19+		
14	0+0000+				1-0+101-				3+	3+3+3-3-				3+2+3-40				24+	3-2-2030				4-4+4+4-				25+		
15	2-3-304+				3-3-3-20				22-	3-3+303-				1+202+30				20+	2+2-1010				3+3+3+40				200		
16	1+1-3020				1+3-4010				160	403-1-1+				2-4+4-3+				22-	303-2+4-				2+2+2-1+				19+		
17	202-0+0+				1+1-103-				100	2-100+1-				2-405-40				180	1+1+1-10				302-2+3-				140		
18	3-2+4020				202+303-				20+	3-10202-				2-0+1-2-				12-	30201020				201+1-1-				13-		
19	3-3+4-4-				3+204-3+				26-	20102+3-				20101+1+				14-	20101-1+				2-0+102+				10+		
20	3-3-2020				101-2-4-				16+	0+0+1+10				1+2+204+				130	303+4-5+				6-605050				370		
21	3-2-3040				2+3+4-4-				24+	5-3+5-40				3+2-204+				280	406-5-4+				404-403+				34-		
22	2+3+5-4-				4-102010				22-	4-505+50				402-4+5-				34-	4-304-4-				5040202+				27+		
23	0+0+0+0+				000+0+00				20	3+4+5+50				4-1+3-1+				270	301+203-				4-4-4+4-				24+		
24	0+0+0+0+				0+0+0+00				2+	1-1020-3-				10102-3-				11-	3-3-201+				202-3030				18+		
25	1-0+1-2-				3-30405-				18-	2+1+3-50				6+6-4040				31+	2-304+30				3-3+2+3-				230		
26	302+3040				5-5+5-40				310	505-5040				3+3+2010				28+	103+2+4-				2+103+2+				19+		
27	3+3+303+				3+3+3-2+				25-	2+10202-				3+302+2+				180	2+30202+				4+301+2-				200		
28	303+2+3-				2+20402-	</																							

Table 63 --- Geomagnetic planetary three-hour-range indices Kp (continued)

E	January 1949			February 1949			March 1949		
	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	2+3+3+2+	2o3-3-4o	23-	1-0+2-2-	1+0+0o0+	6+	2o2-2-4o	4o4-3+3+	24-
2	6-7-4+5+	5o3+4-2+	36+	1o0+1-2-	3-1o2-1-	10-	3o4+4o5-	3o3o4-4o	30-
3	2+2-1+0+	0+1-2o1+	10o	2o0+1+1+	2+2-4o5-	18-	4-3+3+4-	3+5o3+2+	28o
4	2o0+0+0+	2-1+1o1-	8-	6+6-5-4-	3+2-1o1o	27+	3-1+3-3o	2o2o2-2o	17+
5	1o2-0o0+	1-1-1-1+	6+	1+1-2o1+	3-3-2+2o	15o	3o4+3o2o	1-1-1+3-	18-
6	1-2o2+3-	1o2-1+4-	15+	2+1+2-4o	4o5-5-4o	27-	1o1-1o1+	1o1-1o0+	7o
7	3+5-4-2o	1-2-3-4+	23o	5o5+4o4o	2+1+1+1+	25-	2-0+1+2o	1+2+1+2-	12o
8	3o1-1+3-	2o3+3o2+	18+	1o0o0o4-	1o3-1o0+	10-	2-1+2-2o	2+3-2-3-	16o
9	3-3-3-3+	4-3o4-3o	25-	1-0o1+1+	1+1-1o0+	7-	3+4o2-2+	5-5+3o2+	27-
10	2+3-3+2+	3o3o2+5o	24o	2+1o1o1-	1o2o3-2-	12+	1o0+1-1-	0+1+2o1-	7o
11	1+3o3o3-	3-2-3+4+	22o	2+2+4o3+	4+2+3o4+	26o	1-0+1+1+	1+1+0+1-	7+
12	4-2+2-2o	2-4-4+4+	24+	3o4o3+3+	3+3-3-3-	25o	1+0+1+2+	2+3-2o4-	16o
13	5o3o4-3+	2+1o2+1o	22-	4o4o3-3+	3-2-2+4-	24+	4o4-3+4-	4-4-3+4+	30-
14	1-0+2o2+	2o1o2+3-	13+	4-3-3-2+	2o2-1+3+	20-	5+5o4o5o	4o4+5-4o	36+
15	1o0+1-2o	2+1+1o2+	11o	2o2+1+3-	3+4-3o3-	21o	5-2+2o5-	4o3+4-2+	27o
16	3-2o2-3o	3-2o2+2-	18o	3o2o3-2o	2o1o1+3o	17o	2o2-1+2o	2o7+6o4-	26o
17	3+1+1-2o	2-1+1-1o	13-	3+3o4-4o	5+5-3+4o	31+	4o4-3o4o	3o5-5o6+	34-
18	2o4o2o3+	3o4-4-5-	26+	4o4-4+3+	3+2+3+4-	28o	7-5-4+4-	3o4o5-3-	34-
19	4+4o3o3o	3o3-3-3-	25+	3-2+2+2+	1+2-1o1-	14+	2+2+2+2+	3o2o3o3-	19+
20	2o2-3-2+	3-2o1+1+	16o	0o0+1o2-	3-3+3o2+	14+	2-3+3o2+	2+3o3o3-	21+
21	2-3o3-2+	2o2o2o4o	20-	3+3-3-3-	3o5o4-4+	27+	3o3+2+2+	2+3-3o6+	25+
22	3o3+4+3o	3-2-1+1o	20+	6o6+5+5-	3+3+4+4o	37+	7o8-7-7-	5-6-6-3+	47+
23	0+1o1o2+	2+3o3+4-	17o	3-1o1+3o	4-3o2o2o	19-	4o7o6+5o	4o5-1+2-	34o
24	3+3o2o1+	3-3o7+6o	29-	5o4o4-4o	4o4-2-3o	29-	1-2o3+2+	2-1o3-1o	15-
25	9-8o7-4+	5o6o8+8+	55+	2-1-2-2-	2-1o1-1-	10-	0+4-2+3o	3-1+1o3+	18-
26	8+8o7o6-	5o5o5-4o	48-	1o2o2-2-	2-3o1o3-	15-	4-4-4+3o	3o3-1+1o	23-
27	4o5-3-2+	3o3o3+2o	25o	3-4-5+4o	2+2-1+2-	23-	0o0o1o1o	1+1-1o1o	6o
28	2o3-2+2-	2-2+2o1+	16o	0+1+3o1+	1-3o1-1o	11+	1+3+3-3-	3-3+4+4+	24o
29	2+1+2o2+	2o2o2o2-	16-				4+2-3o4-	3o3+2o2o	23o
30	1o1-1-0+	1-1-1-1-	5+				1+4o3-3o	2+2o1o1o	17+
31	0+1+2-1+	2-2+3-1o	12+				2o2o1o1o	0o1o0+0o	7+

E	April 1949			May 1949			June 1949		
	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum	1 2 3 4	5 6 7 8	Sum
1	0o1-1o1+	1+2-2+3-	11o	0o0+1-1-	1-2+2o2o	9-	4-4o3o2+	2+1o1-3o	20o
2	3+1-1-1+	1o1+1+1o	11-	3-3-1o0+	2o4-3-2+	17+	2o1o4-3o	2+2+2-2o	18o
3	1+2-3o2+	3o3+1-1-	16o	3o3o2-2-	1-1-4o7o	22-	2o1o2o2+	1+1-1o5o	15+
4	1-2-2+2+	2-1o1o1o	12-	6o5+4o3+	4o4o2o1o	30-	6+4o5+2+	3+6o7-6-	40-
5	1-2-1o3-	2o1+1-2-	12-	1o1+2o3-	3+4-4o5o	23o	4-5+5o5-	6-6o6-6+	42+
6	2o2o1o2-	0+1-1-1o	9+	4+4o3o2o	2o3o3o3-	24o	5o5o2+2-	1+2o3-6o	26o
7	2o0+1o3-	2o3+5+7+	24o	3-3-2-1+	2-3-2+3o	18o	4-3+3+2+	2+1+2o2-	20o
8	7-6+6+7o	7-5+5+3-	46+	2+2+2o2-	2o1+3o4o	19-	2-2-2o2o	2-1+2-1+	13+
9	2o2+2o2o	2+2o1o3+	17+	3+2+4-2+	3-4+3o2-	23+	3-2-2+2o	1o1-3o2+	16-
10	4o4o4-3o	3+4+5+5+	33o	2o2-2o1+	3+3-3-3+	19o	1o1+1-2-	1o0+0+0+	7-
11	4+3-4o4-	5+5+3+3-	31+	5-4-3+3+	2-1+2+1+	22-	0+0+1-1-	2-2+2o2o	10o
12	1+2o4o4-	4+6o4-3o	28o	2o2o7+7+	8+9-8+7o	51o	4o3+3o4-	5o5o5o5o	34o
13	5-5+3+4o	4+3+3+3-	31o	8o7+3+2o	5+3+1o2+	33-	6o2+3o4o	3-2o2-2+	24o
14	3+4+4-3+	2+3-3-3+	26+	4-3o3+4-	3+3+3-3o	26o	1-1-1o2-	2+1-3-3-	12+
15	3+3-3o2o	2o2-2-3-	19o	3+3o2+2+	2o1o0+0+	15-	3-3o2+2+	3-3+4-2-	22-
16	2o2+2o4-	3+4o2o3o	22+	1+3+3+3-	3+3o2+4o	23+	2o2-2o2+	1+2+2o3-	16+
17	3+2+3-3-	3-2o2-3+	21-	4-3-2+1o	1o2-1o0+	14-	1+1o1o1-	2-1+3o4+	14+
18	3-3-1-1o	0+2-2+2o	13+	0+1-1-1o	1-1-1+1+	7-	4o2+3-3o	3-3o3-3-	23o
19	1+1+2+2-	1+1-1+2+	12+	1+1o0+0+	1o3o1+1o	9+	3o3o2-3-	2+2o1o1o	17-
20	1+1o2-1-	1-1-2o2-	10-	1+1+1-1-	1+1-1+1+	9-	1o2-2o2-	2+2-2-2-	14-
21	2o2o1-1-	1-1-1+2-	10-	1-1o2o3-	3o2o1+1+	14o	1o1-1+2o	2o1o1+1o	10+
22	1+1o1+1o	2+2o1o1-	11-	3o2+2-2+	2o2+1+2-	17-	0+1+1o3-	3+4-3o2-	17o
23	0+1+2o2o	2+2+2+1o	14-	2o2+2+1+	2+2-2+3o	17+	2-2-1o2+	1+1+0+0+	10o
24	3o2o2o2+	1+2+1o2+	16+	2+2+3o2-	1o1+1o1o	14-	0+1o1o2o	2+2o3o2+	14o
25	3-2o1+1o	2-1+1o2-	13-	1-0+1+4-	3+3o1+1-	14+	4-2+4-4o	3+2o2-1o	22-
26	3+3-1+1+	2-2o1o1+	15-	1o1o2-2o	2+3-1o1o	13-	1+2-1+2-	3o2+3-3o	17o
27	3+5-3+3+	2+1+1-1o	20o	0+1o1o3-	3-2-2-1+	12+	3o3-2o1+	1+2o2o2+	17-
28	1-2o2-2+	1o2+2+2o	14+	3o2o2o1+	1-1o1-0+	11o	1+1o2+3-	2-3o2+3+	18-
29	2o1o1o1o	1o5+4+3o	19-	0+1-1-1o	1o1-1-0+	5+	3-3+3-3-	2-3o4-3+	24-
30	3o1+1+1+	1+0+1-0o	9+	0+1o1o1o	4+5-6+7-	25+	2+2-2-2o	3-2o2-3-	17-
31				5-6o3+4-	4+3+4+4o	34-			

Table 63.--Geomagnetic planetary three-hour-range indices Kp (concluded)

July 1949										August 1949										September 1949									
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum		
1	2-2o2-2o				1-1o1+1+				12-	0+1o2-2+				2o1-2o1+				11+	3-1o4-3o				3+4o4o4-				25+		
2	1+1+1+0+				0+1-0+1o				7-	1o2-4o4+				5o4o2-2o				24-	3o5-4o2o				3o3+4o4-				28-		
3	0+1-1-1-				1-1+2o1+				8-	5o5+7o7o				5-3+3+4-				39+	5-5+6o4o				5-4o4o2+				35o		
4	1-1-1-0+				1-1o0+1-				5o	7-7-6+4-				5o4o6-4+				42+	3+3+3o3o				2o2-3+2+				22o		
5	0+1o1o2-				1+0+0+1o				7o	4o3-2+3-				4-4-4o3+				26+	3o2o2o2+				2o3o3-2o				19o		
6	1-1+1-0+				1+0+1+1o				7o	3-2-1-4-				2-1-3-2+				16o	2o2o3-4-				2+1+1+1o				16+		
7	3o1o1+2-				4o4-1o1-				16+	1o1o1o1o				3+4+2+3+				17+	0+2-2+2o				2o2-2o2-				14-		
8	1+1+2-2-				1+3o4-3-				17-	6o7-4-4-				4-1+1+1+				28-	2o1+3-4-				2o2+3o3+				20+		
9	1o2-4-4o				2o1o0+1-				14+	2-1+1o2+				3o3o3+2o				18-	4-2-1+2+				1o1+1o1-				13o		
10	1-1o1-1-				1o1o1+0+				7-	1+3-3-2o				2+4-1+3+				19+	0o0+1-1-				2-1+1+2+				8+		
11	0o1+1-1o				1o1+1+2+				9o	0+1-1o1-				2-1+1-1+				8-	2o3o3o3o				2o2-2+2o				19o		
12	1-1-1o1o				2-1+5o2+				14-	1+1-1o1o				1o1o1+1-				8o	3-3+5o4o				6-4o3+2+				3o+		
13	4-4+3+3-				2+3o1+1+				22o	1+1-2-2o				2+3-2-3o				15+	4o4o3o3-				2o2-1-3-				21-		
14	1-2o2o1+				2+1o1o1+				12-	5+3+4-4+				5-3+4o5o				34-	2-2o2+3-				5+4+2o2o				22+		
15	1-0+0+0+				1-1-0+0+				4-	5o5+4-3-				3-3-3o4o				29o	2+2o1+2+				3-3+3-2+				19o		
16	0+1-1+2o				5-4-5o4-				21+	3o2+2o2+				1+1+1-1o				14o	4-3+2o2+				2o3-2o2+				20+		
17	3-2-3+4-				4-3o1o1+				20+	2-3-2-2+				4o3+3o3o				22-	0+1o1o1+				2o2-3-3-				14-		
18	2-1+1+3o				3-3+4-3o				20o	1-1+3-3o				3+3+3-3+				20+	2o1+1-2-				1+0+0+1-				8+		
19	3+4o3+3o				3+3-2o2o				24-	3+2+1+3o				3-2+2-3o				20-	0+0+0+1-				0+1-0+0o				3o		
20	4-1-1+2-				2-2-1o1-				12+	3-3+3-2-				3-1o2o2+				18+	0o0o0+1-				1-1-1-1-				4-		
21	0+1o1o2o				2+2-1o2o				11+	1+2+1o2-				2-2-3-2+				15-	0o1-0o1-				1o1-0+2o				5+		
22	1-1+2o2+				3-3-4o4-				19+	2+3-2o2o				2-1+1o1+				14+	2-2-2o3-				2-2o1-0+				13-		
23	4+4-3-3-				4-2-2+3-				24-	1-1+2-1o				1-0+0+1-				7-	1o2o1+2o				2-1-1-1o				10+		
24	3o2-2-0+				3-3-2+2-				16o	0+1+0+1o				1-0+0+0+				5-	1+2o2o2-				2+3-3-5+				20o		
25	2o3-4-1o				2+2-2+3-				18+	0+0+1-0+				1-1-0+1-				4o	5-5-3-5-				4-4+5o4-				33+		
26	2-1o3o1o				1-1-1o1o				10o	1o1-1+2o				1-1o1+1+				9+	4o4o4-3o				3-2+2-5-				26o		
27	1+0+0+0+				0+1o1+1-				6-	2o3-3+2+				3-3o2o2o				20o	4+4-5-4o				5-3-2o3o				29o		
28	0o0+0+1o				1o1-1+1+				6o	2+3o2-2o				2o2-1o1+				15o	4+3+4-2-				1o1o0+1-				16o		
29	1-1o1+2-				2o2-1o1-				10o	0+1+3-2-				2-1+2+3+				15-	2+1o2+2-				2o1+2-1+				14-		
30	1-1+2+2o				1+1o2+1o				12o	3o3o2+2o				2o2-1o1o				16o	1-2+4o4-				3o3-5-3-				24-		
31	2-2+2o2-				1+2o2-1-				13+	2+2-2-1-				1+2-2+3-				14+											

October 1949										November 1949										December 1949									
E	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum	1	2	3	4	5	6	7	8	Sum		
1	4-3-3-3-				2-1+0+2o				17o	2+1-2+4-				5+6o6-3+				29+	3o4o4o2+				0+1-1o0o				15+		
2	2+4o3o1+				1o0+1o1o				14o	3o3+5-4+				5-4+4o6-				34o	0o2o3-2o				0+0+0+1o				9-		
3	1-0+1-2-				1+1-1-2+				8+	5+5-3+1+				1+2o2+4+				25+	1+1o2-2o				4-3-2+3+				18o		
4	4-3o3o4-				4+3o3o2+				26o	1+2+3o3-				2o3-2o1o				17o	3o3-3o3-				2+2o4-4o				23+		
5	4o4o4o3o				2+3o2o3-				25o	3o4-4+3o				4-3+2o4o				27o	3o3-2+2+				2o3-2+2+				20-		
6	1+2-3+4o				4-5-4o4o				27-	4o3-2-2o				2+2o1+1+				17+	3+2+3o3-				3-2o2+2-				20o		
7	4-5o5-4+				5o6o7+6+				42+	1+1+1+1+				1o1o2-1o				10o	2o3-1o1-				1-1o0o0o				8o		
8	7-4o3+3+				5o5+3+3-				34-	0+0o0o0+				1-1-0o1o				3o	0o0o1+1+				2+2-1+2o				10o		
9	5o5-3o2+				3o3o2+2-				25o	1-2-3+2+				2-2-2+2-				15+	2-5-5+4+				3o3+2+3+				28o		
10	1o0+1+4o				2+3o2o1+				15+	1+1+3+3o				3-4-2+4-				21+	1+1+2o1+				1-1+2o2-				12-		
11	4-3-2+3-				4o4+3-4-				26o	4+5+4+3+				2+5-3-2-				29-	1+0o1o1o				0+1o1+0o				6o		
12	3-2-2+3-				3-1-1+2-				16-	2-2+3-3+				3-3+4+4-				24o	0o1-0+1-				0+1-1-1-				4o		
13	2o2-2o1-				2o4-5o3o				20o	4-3+2o2o				3-3o2-1-				19o	1o1+2-1-				1-1+0o0+				7o		
14	4-4+5o6+				6-7+8-7o				47o	1o3+3+3o				3-3o2-3-				21-	2+3-3+3o				3+4-2+2+				23o		
15	6o6o7+8o				7+7+8+8-				58o	3-2-2-2-				2-3+3-3-				18o	3o3-2-2o				1+1o1+2+				15+		
16	6+7o5+6+				4+5o4-3o				41o	5o4-3-2-				1-1o1o1-				16+	4+2+1+1-				1o1o2+1+				14+		
17	4o3-3+3-				2-3+4-3-				24o	0+0o0+0+				1-0+2-2-				5+	2o2+2-1o				0+0+1+1+				10+		
18	2-1+2+3o				3-2o1+0+				15-	2+1o2-3-				3+2o2o3-				18-	2+1o1-1-				1-1-1+1o				8-		
19	0+1o4o4o				4-4-2+3-				22-	3+2+3+3o				3+4+6o6+				32o	0+1+1+1-				2+2o1-2+				11o		
20	3o2-1o2+				3+2o3-3+				19+	6o6-6o3o				5-4o3o2+				35-	3o2o2+3-				1o3-3-2+				19-		
21	2o4-3-3o				3-3o1+0+				19-	3+2o2o2o				3o4-5o2o				23o	1o4o2+2-				2o2+2+2o				18-		
22	2o1o2-2+				2o2-4-6-				20o	1+0+1-1+				1+2o2o2-				11-	3-3+1o1+				1+1-2o2-				14o		
23	3o2-2+3o				3o3+5-3+				24+	2+3-2-1+				1-1+3o2+				15+	1o1+0+1+				2o3o4o2o				15o		
24	5o5o3+3o				2-2o2-2-				23+	3-3+1+2o				1o1o0+0o				12-	4+3o4-4-				1+2+2o1-				21o		
25	3-2o1o2+				2-1-1o0+				12-	0o0o1+2-				2o1o2o1+				9+	2+2o2o1+				3-3-1+1o				15+		
26	2o1+1o1+				1o1o3o2-				12+	1-0o1o1o				1+1-1+2+				8+	2+2+2o1+				1o1o0+1o				11+		
27	1+4+3+2+				5-4o6o6-				32-	3-2+3+3-				3-4-3-2o				22o	2o0+0+1+				2+2o2o2-				12o		
28	6-6-5-4-			</																									

GRAPHS OF IONOSPHERIC DATA

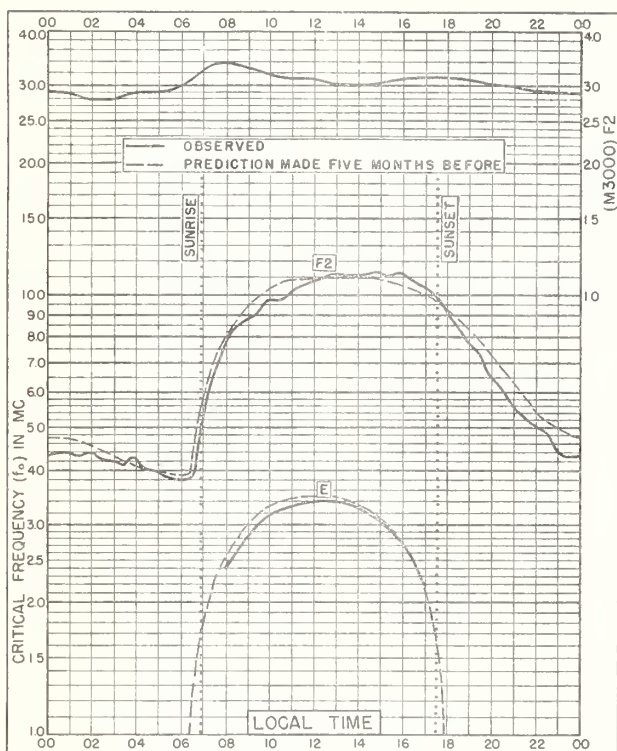


Fig. 1. WASHINGTON, D. C.
38.7°N, 77.1°W FEBRUARY 1950

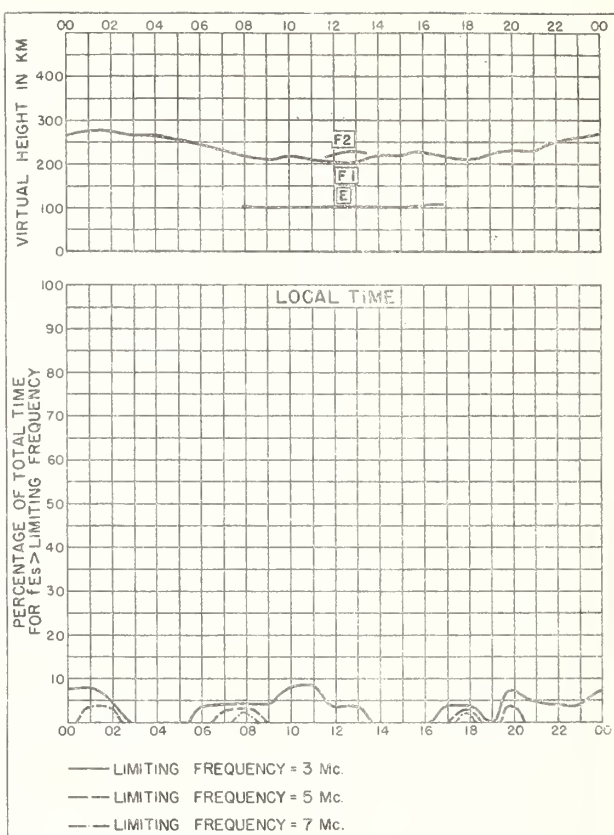


Fig. 2. WASHINGTON, D. C. FEBRUARY 1950

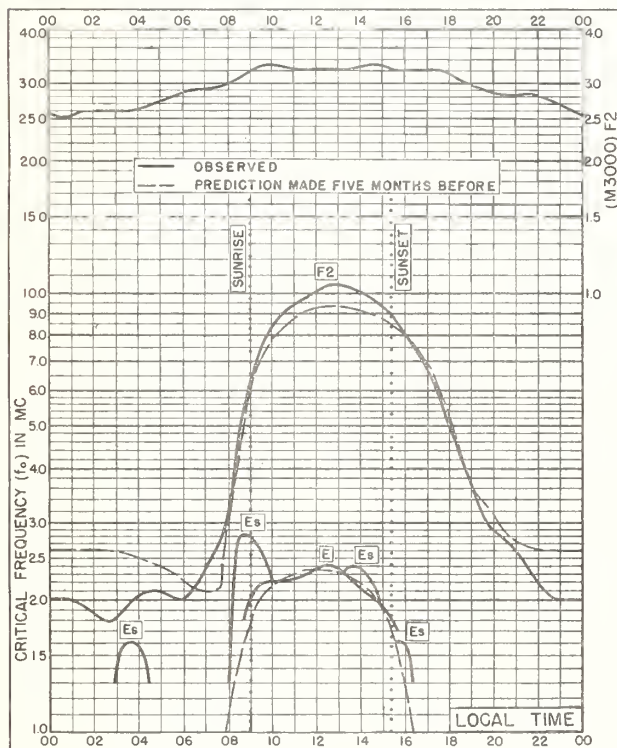


Fig. 3. OSLO, NORWAY
60.0°N, 11.0°E JANUARY 1950

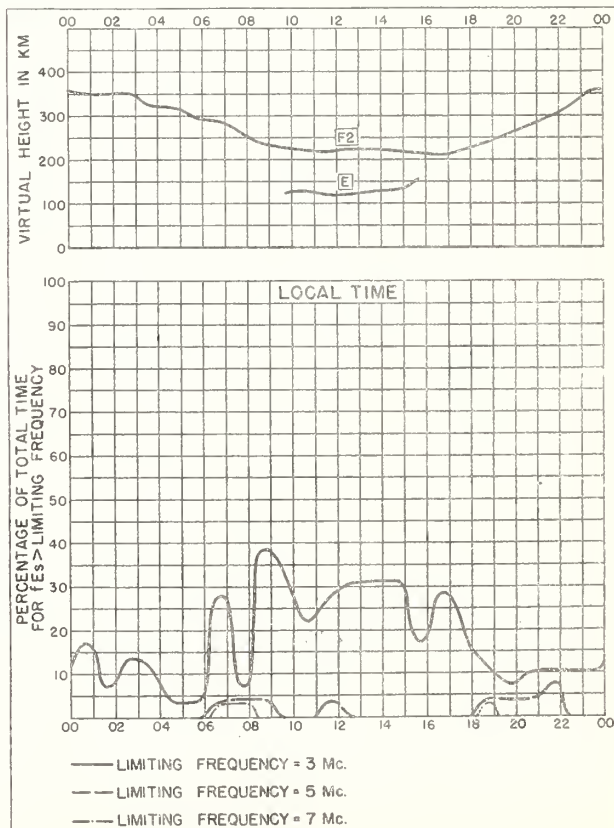


Fig. 4. OSLO, NORWAY JANUARY 1950

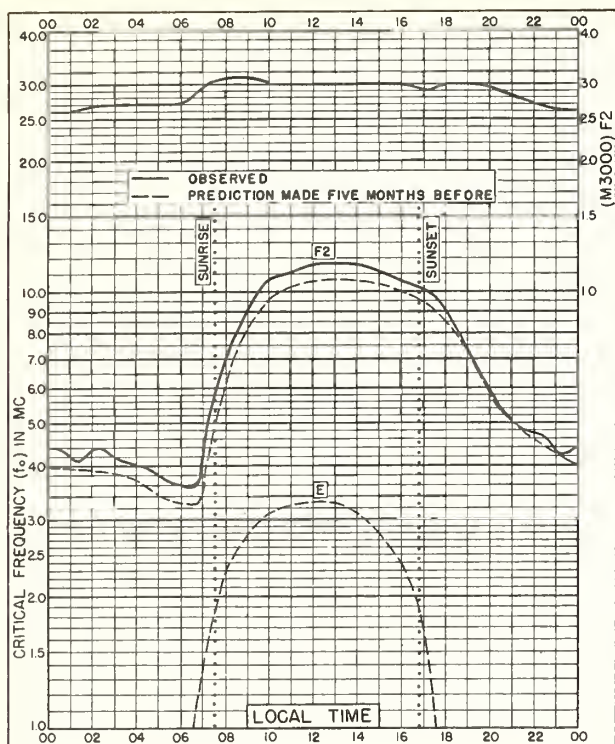


Fig. 5. BOSTON, MASSACHUSETTS
42.4°N, 71.2°W

JANUARY 1950

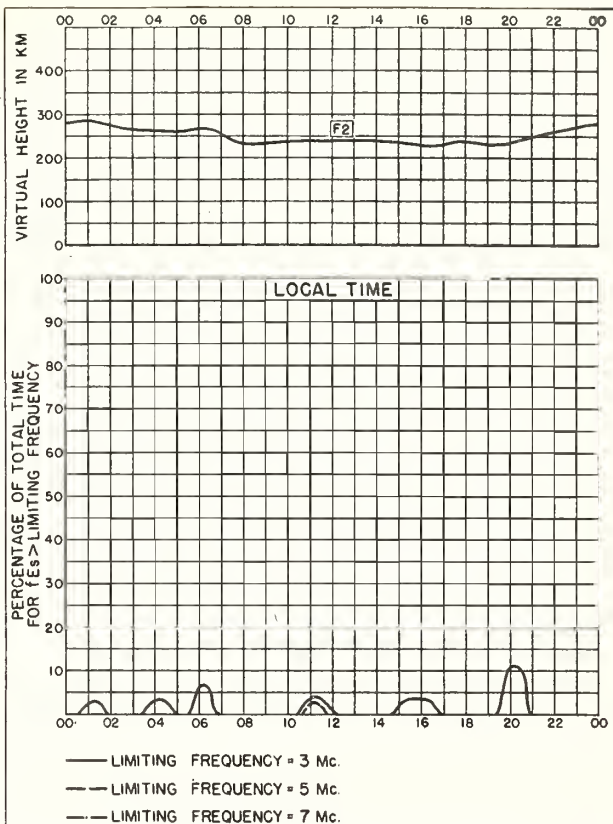


Fig. 6. BOSTON, MASSACHUSETTS JANUARY 1950

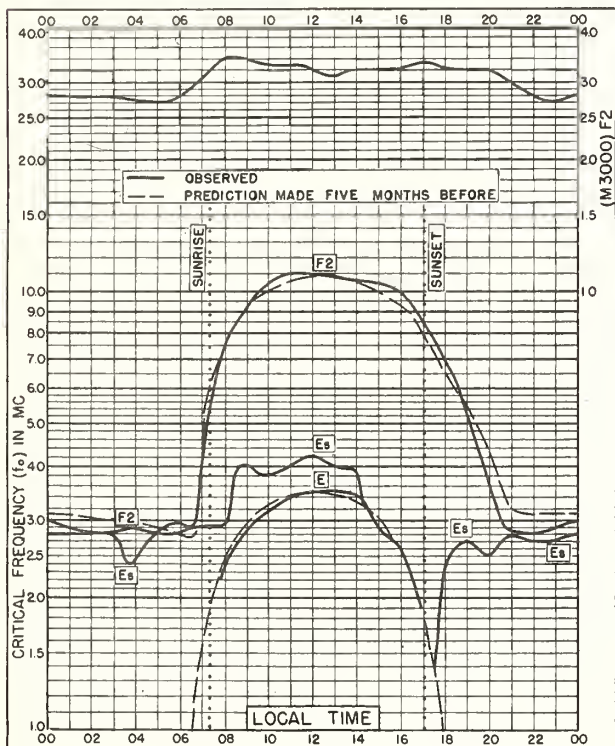


Fig. 7. SAN FRANCISCO, CALIFORNIA
37.4°N, 122.2°W

JANUARY 1950

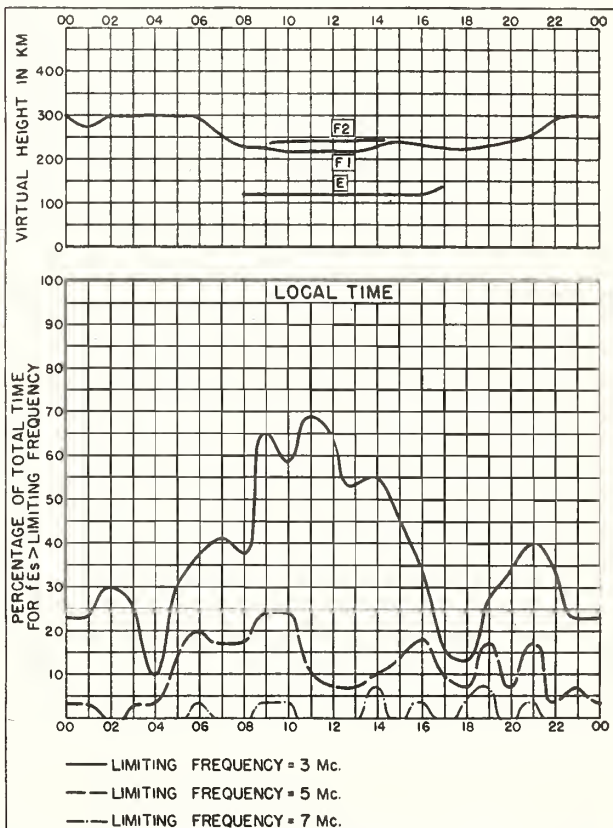


Fig. 8. SAN FRANCISCO, CALIFORNIA JANUARY 1950

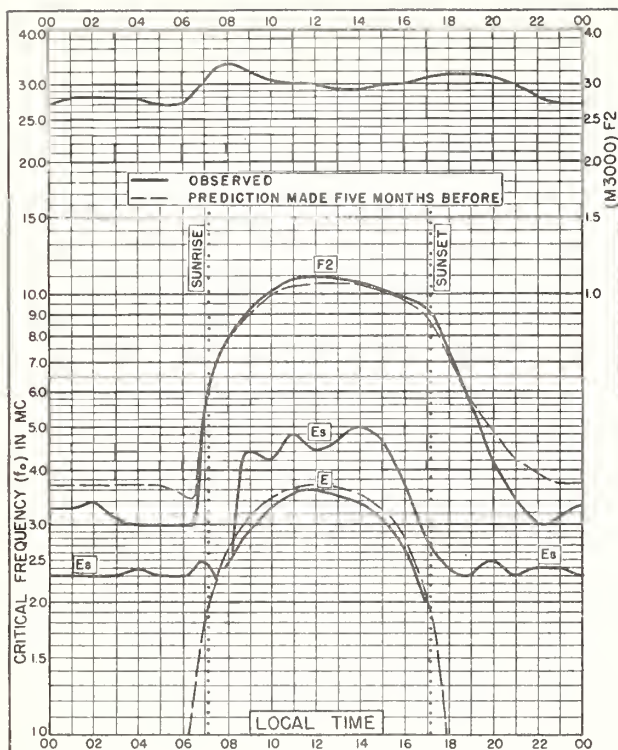


Fig. 9. WHITE SANDS, NEW MEXICO
32.3°N, 106.5°W JANUARY 1950

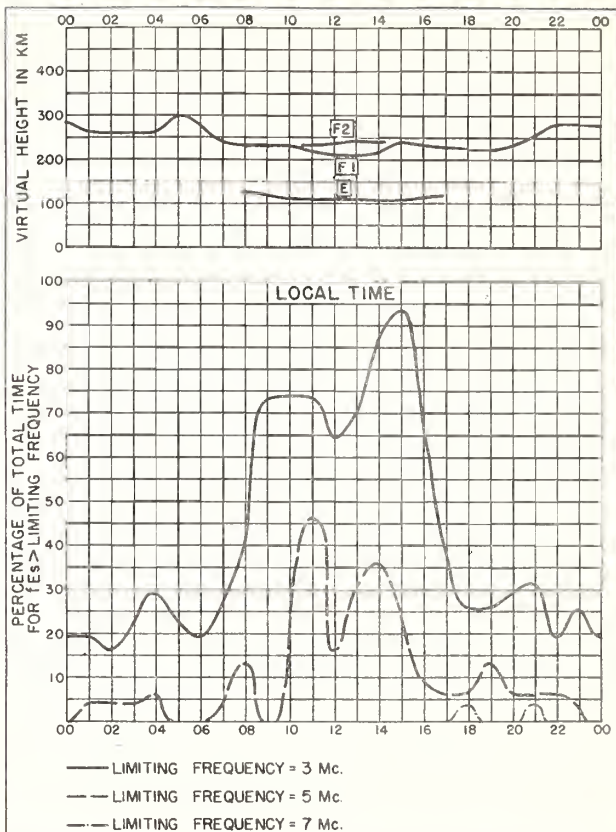


Fig. 10. WHITE SANDS, NEW MEXICO JANUARY 1950

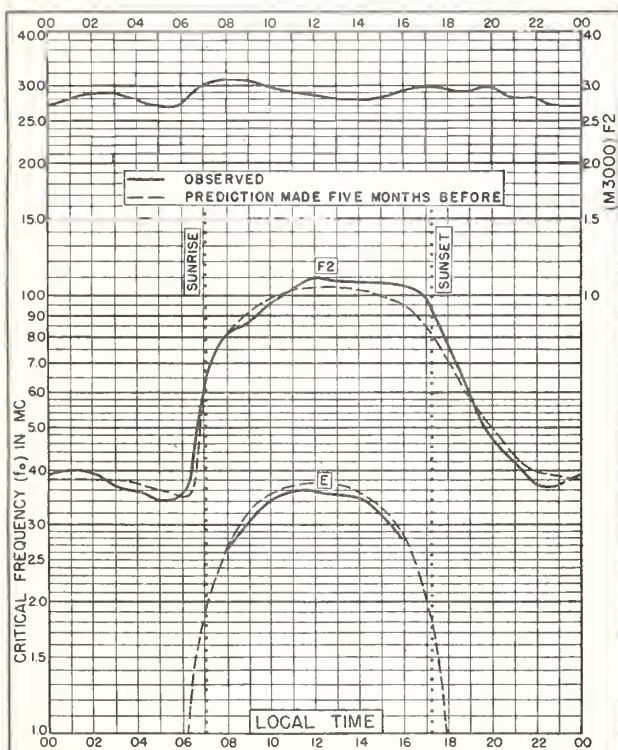


Fig. 11. BATON ROUGE, LOUISIANA
30.5°N, 91.2°W JANUARY 1950

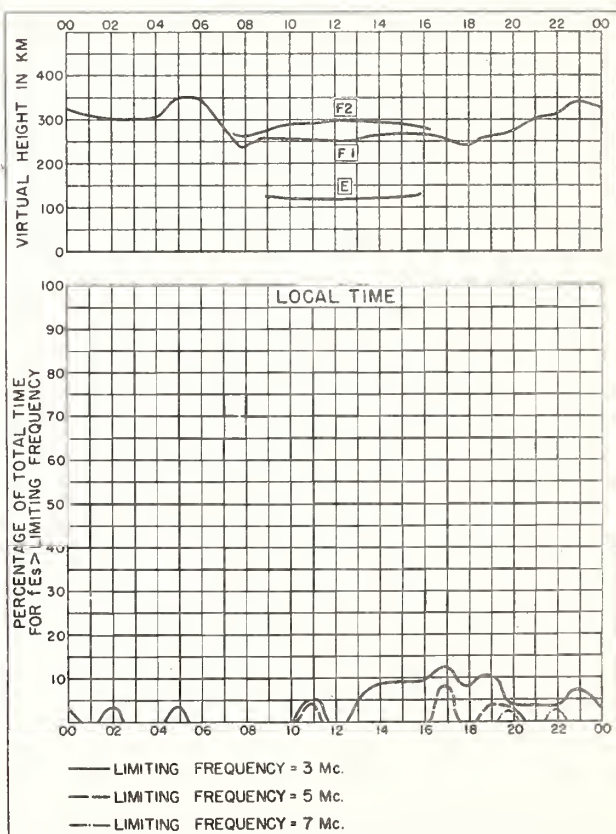


Fig. 12. BATON ROUGE, LOUISIANA JANUARY 1950

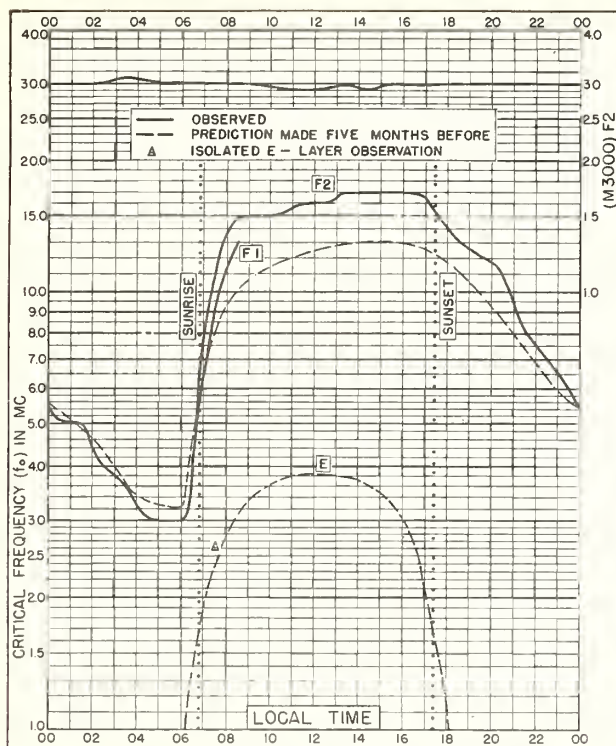


Fig. 13. OKINAWA I.
26.3°N, 127.7°E

JANUARY 1950

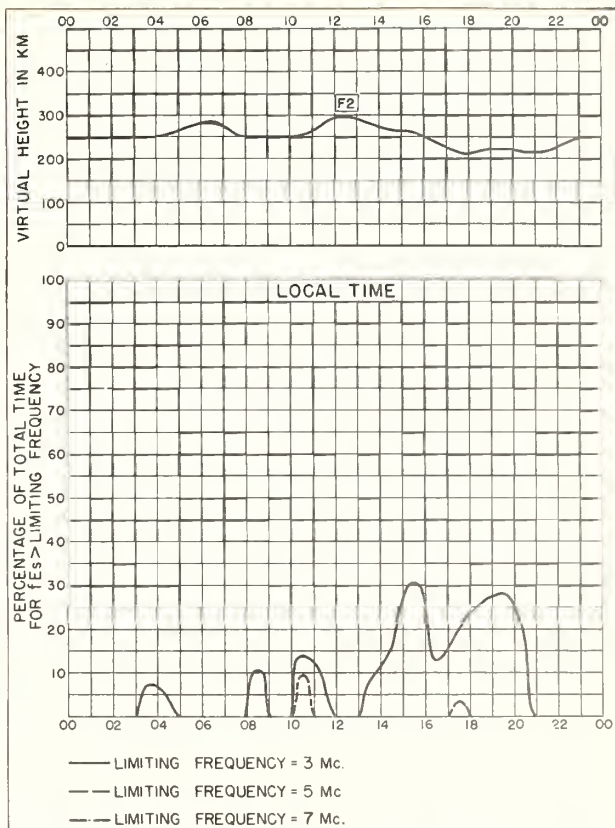


Fig. 14. OKINAWA I.

JANUARY 1950

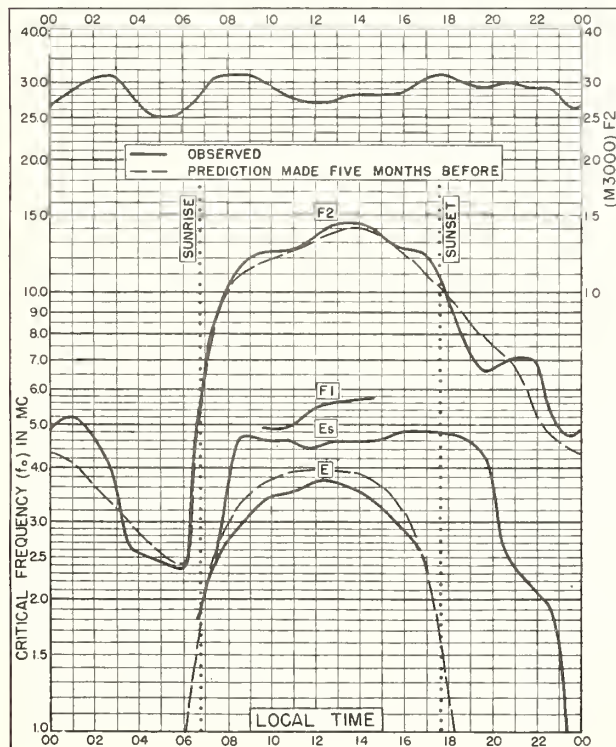


Fig. 15. MAUI, HAWAII
20.8°N, 156.5°W

JANUARY 1950

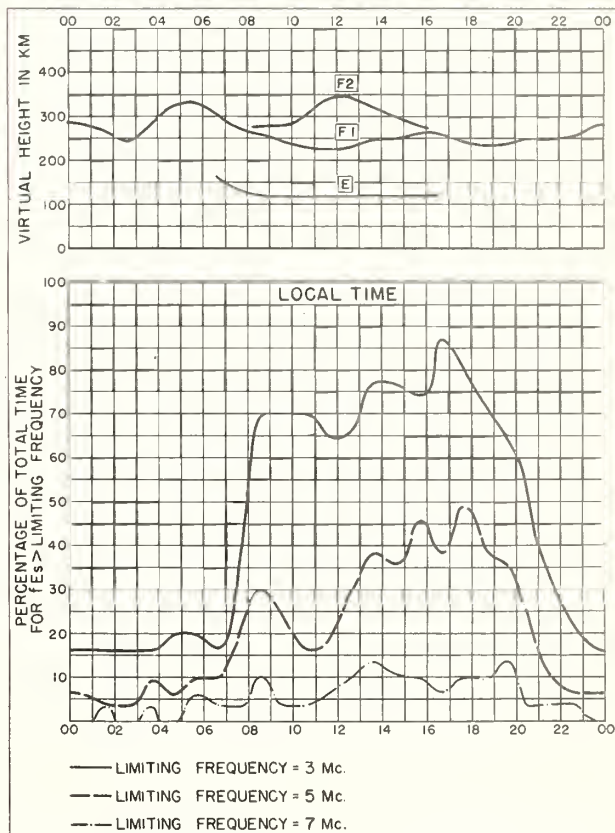


Fig. 16. MAUI, HAWAII

JANUARY 1950

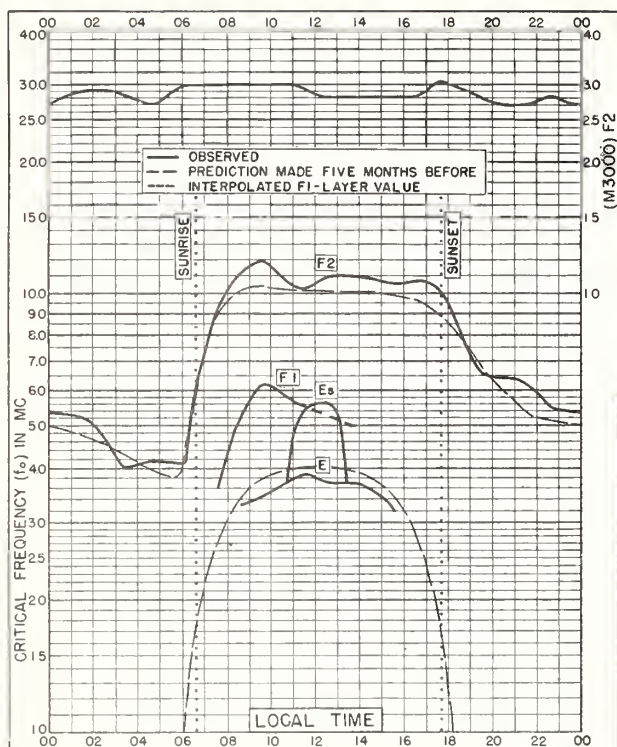


Fig. 17. SAN JUAN, PUERTO RICO
18. 4°N, 66. 1°W

JANUARY 1950

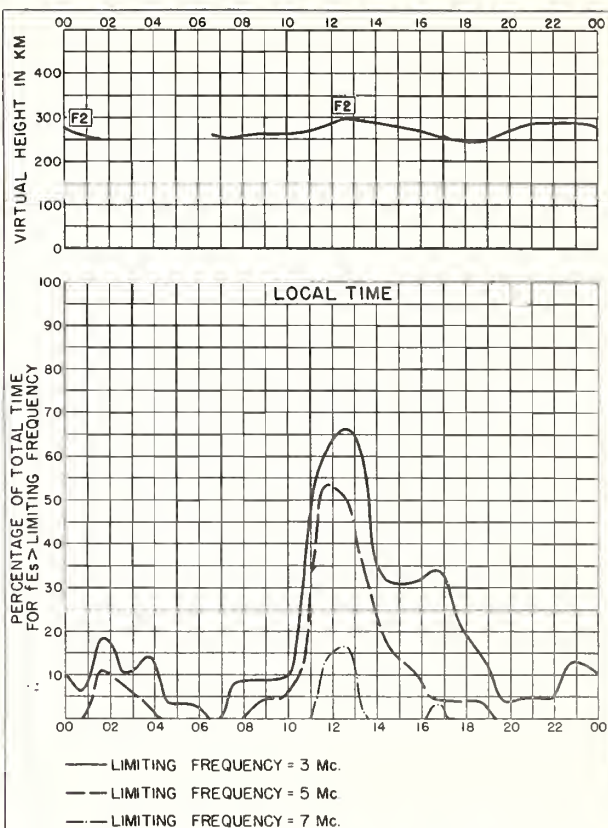


Fig. 18. SAN JUAN, PUERTO RICO

JANUARY 1950

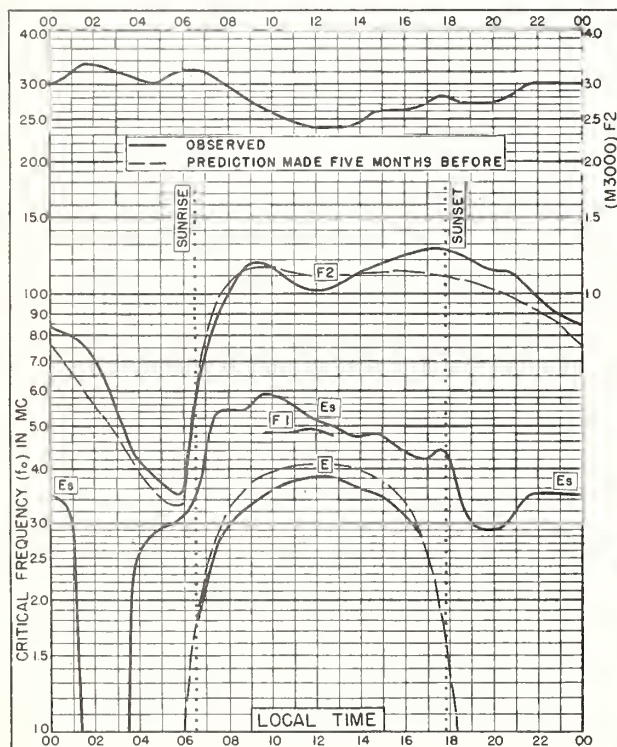


Fig. 19. GUAM I.
13. 6°N, 144. 9°E

JANUARY 1950

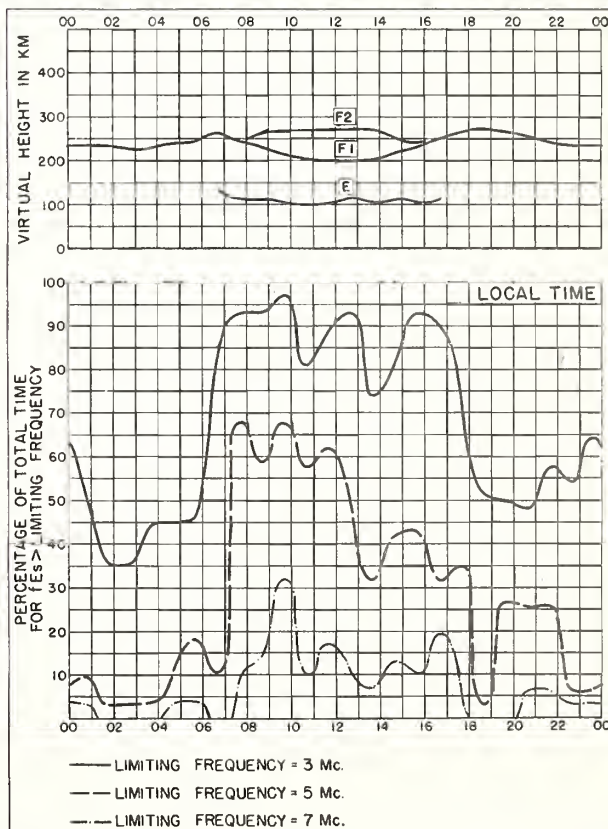


Fig. 20. GUAM I.

JANUARY 1950

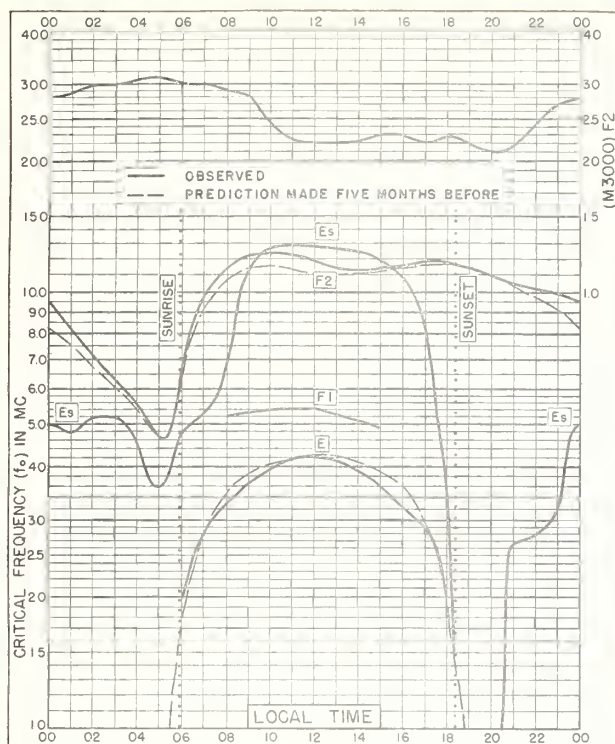


Fig. 21. HUANCAYO, PERU
12.0°S, 75.3°W

JANUARY 1950

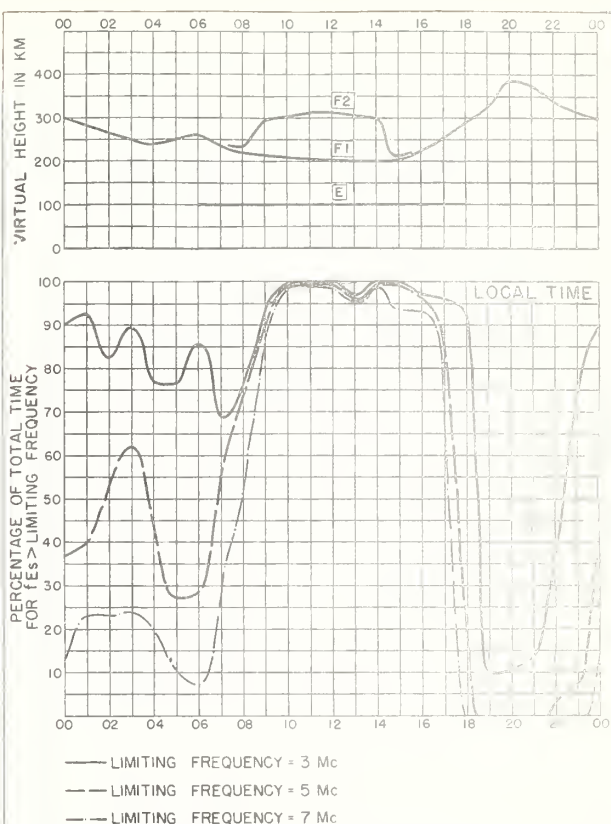


Fig. 22. HUANCAYO, PERU

JANUARY 1950

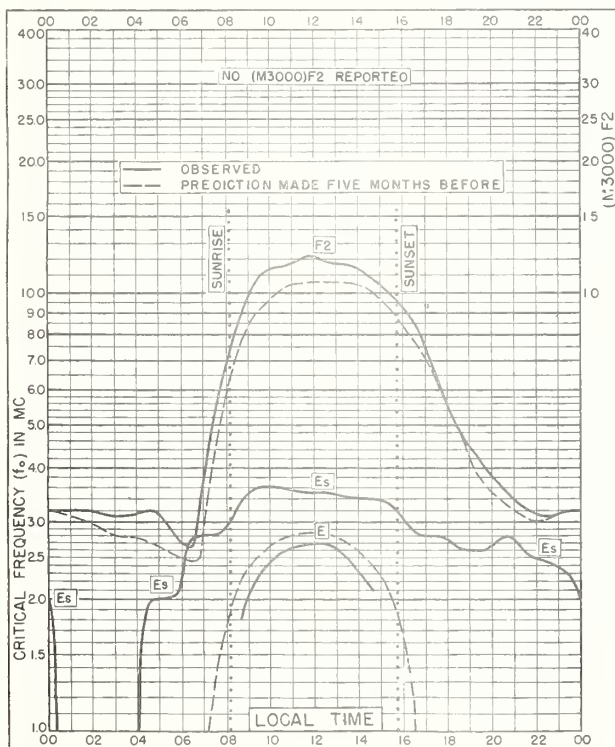


Fig. 23. LINDAU/HARZ, GERMANY
51.6°N, 10.1°E

DECEMBER 1949

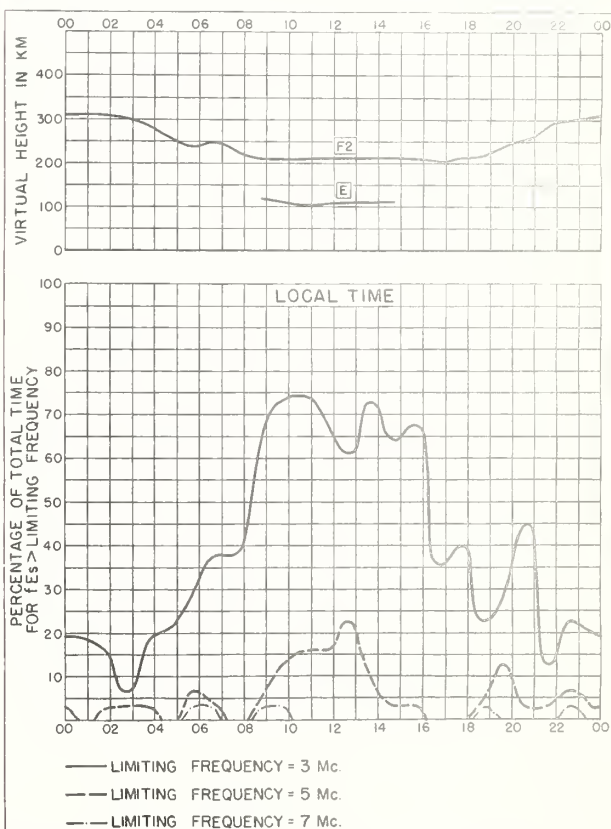


Fig. 24. LINDAU/HARZ, GERMANY

DECEMBER 1949

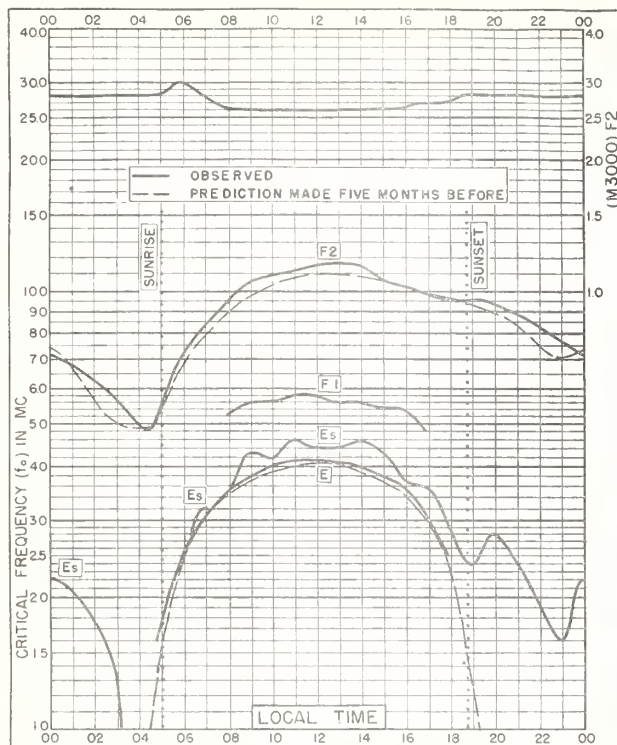


Fig. 25. JOHANNESBURG, U. OF S. AFRICA
26.2°S, 28.0°E DECEMBER 1949

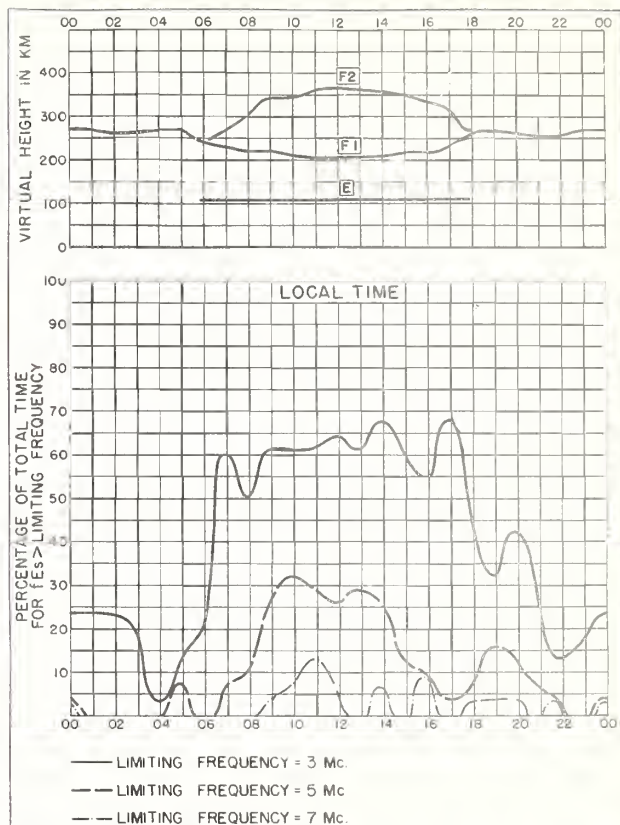


Fig. 26. JOHANNESBURG, U. OF S. AFRICA DECEMBER 1949

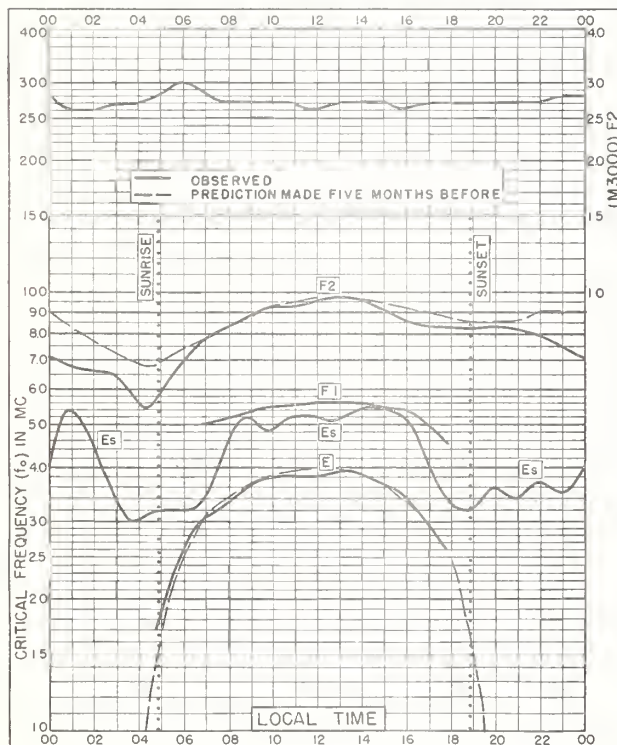


Fig. 27. WATHEROO, W. AUSTRALIA
30.3°S, 115.9°E DECEMBER 1949

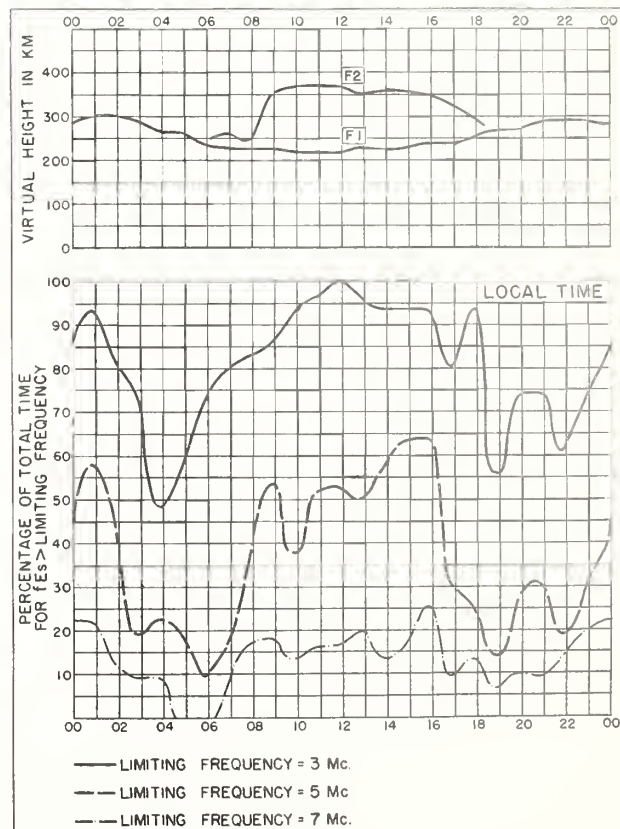


Fig. 28. WATHEROO, W. AUSTRALIA DECEMBER 1949

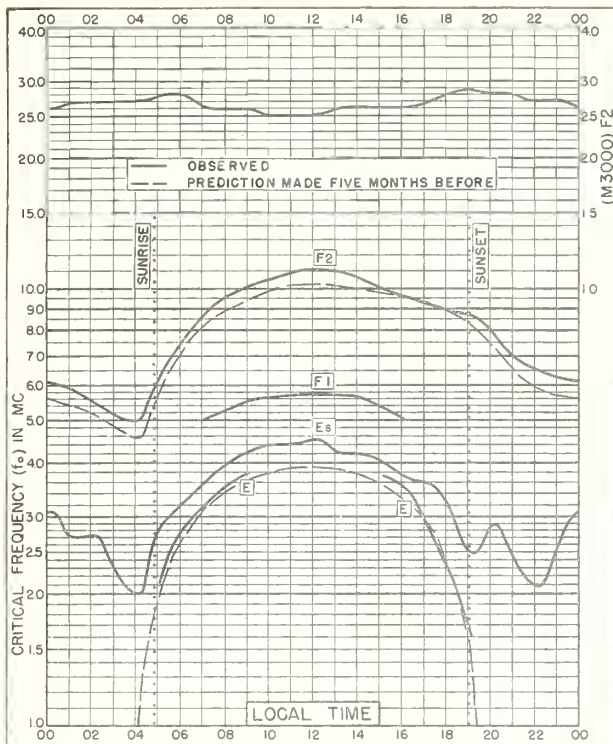


Fig. 29. CAPETOWN, U. OF S. AFRICA
34.2°S, 18.3°E
DECEMBER 1949

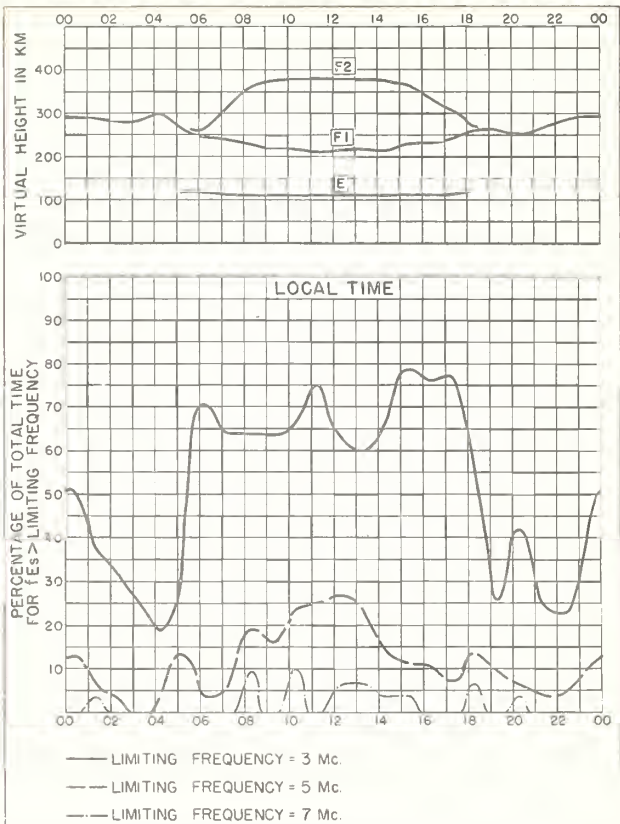


Fig. 30. CAPETOWN, U. OF S. AFRICA
DECEMBER 1949

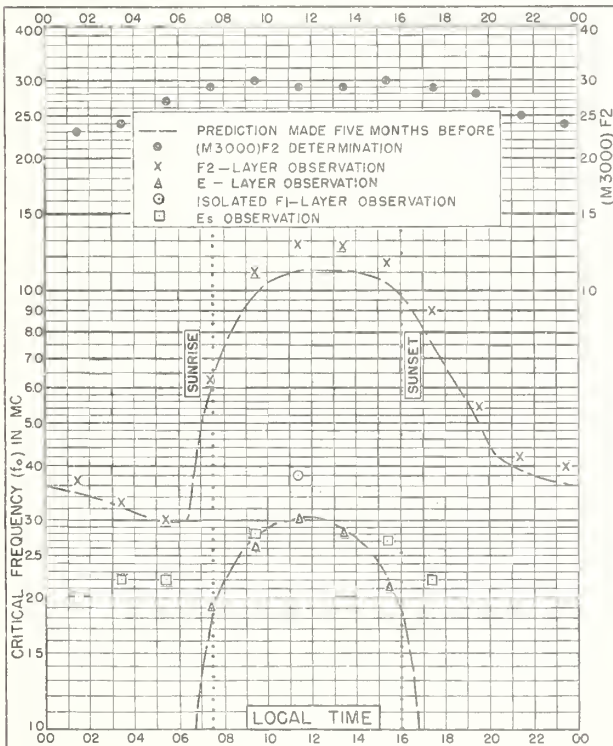


Fig. 31. DeBILT, HOLLAND
52.8°N, 6.7°E
NOVEMBER 1949

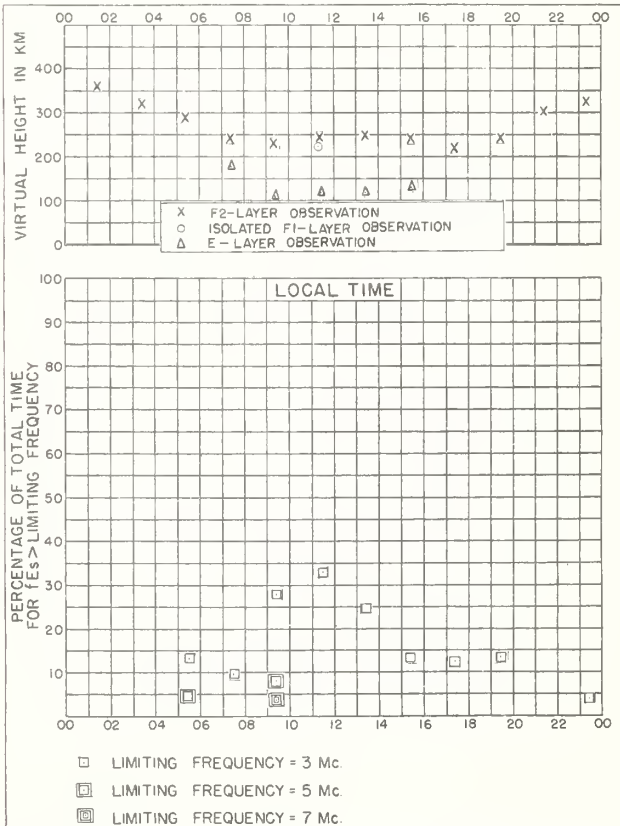
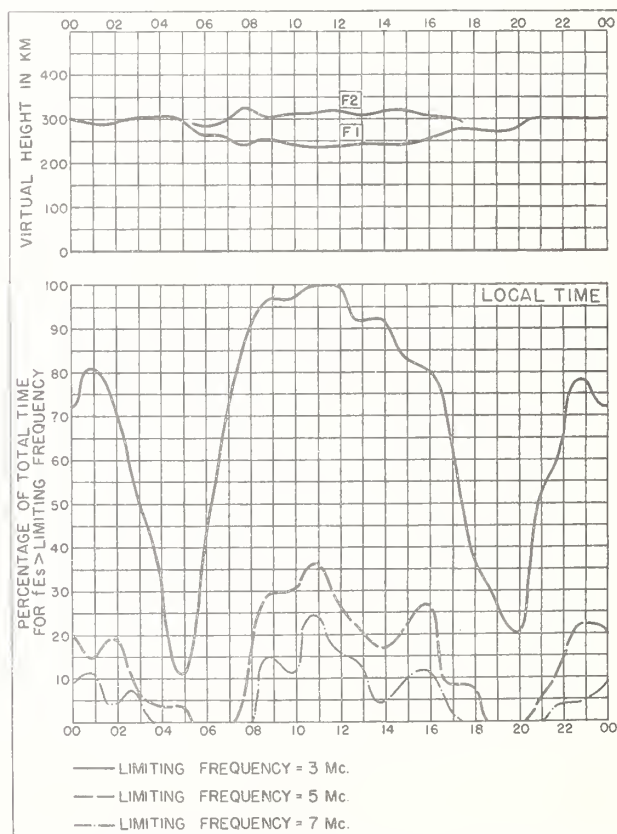
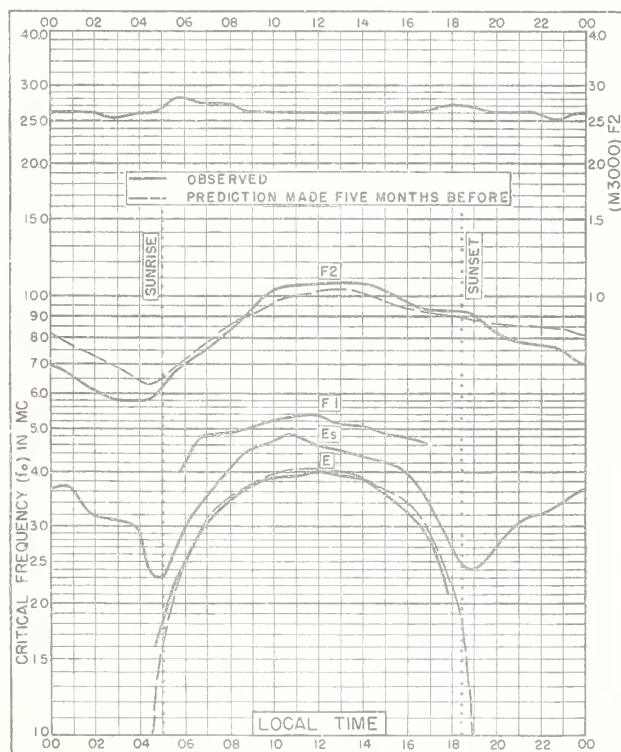
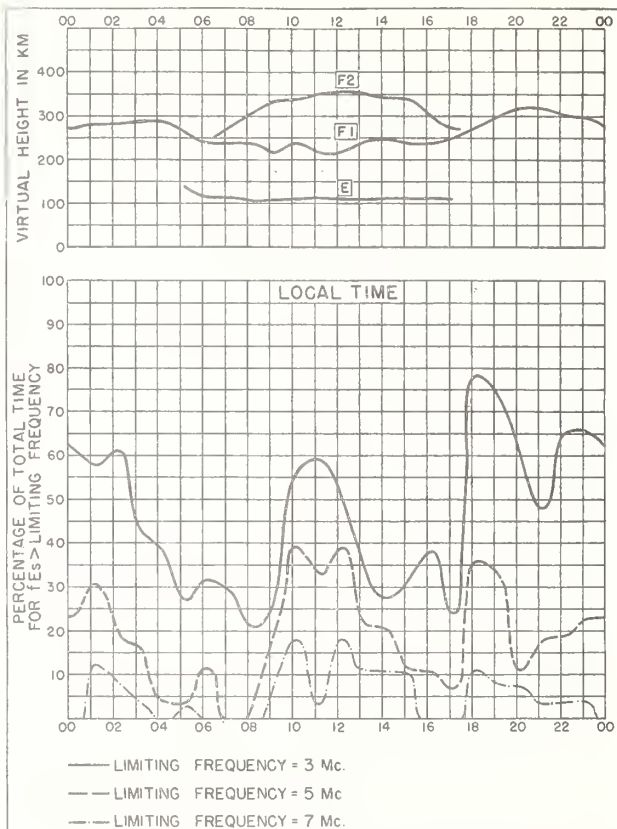
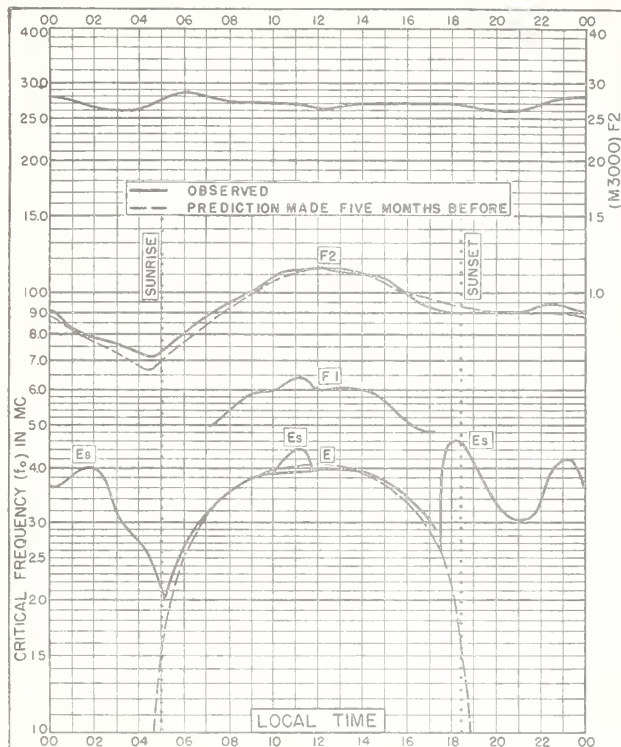


Fig. 32. DeBILT, HOLLAND
NOVEMBER 1949



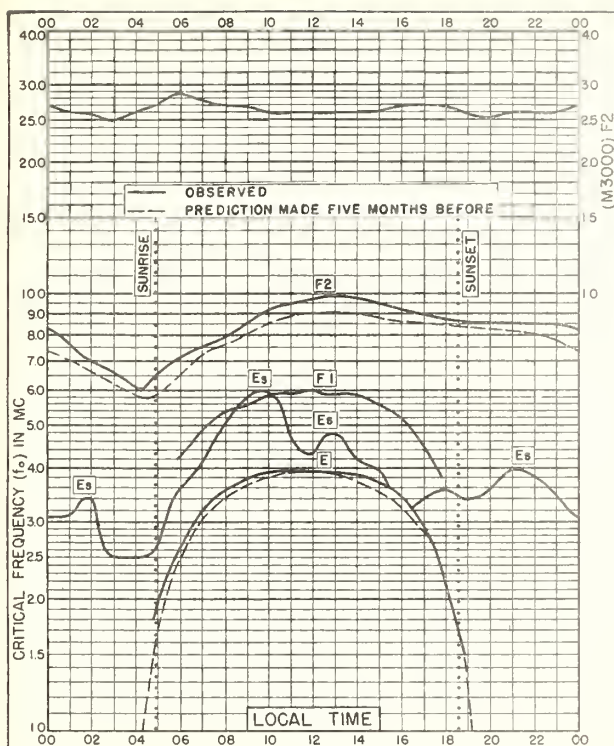


Fig. 37. CANBERRA, AUSTRALIA
35.3°S, 149.0°E

NOVEMBER 1949

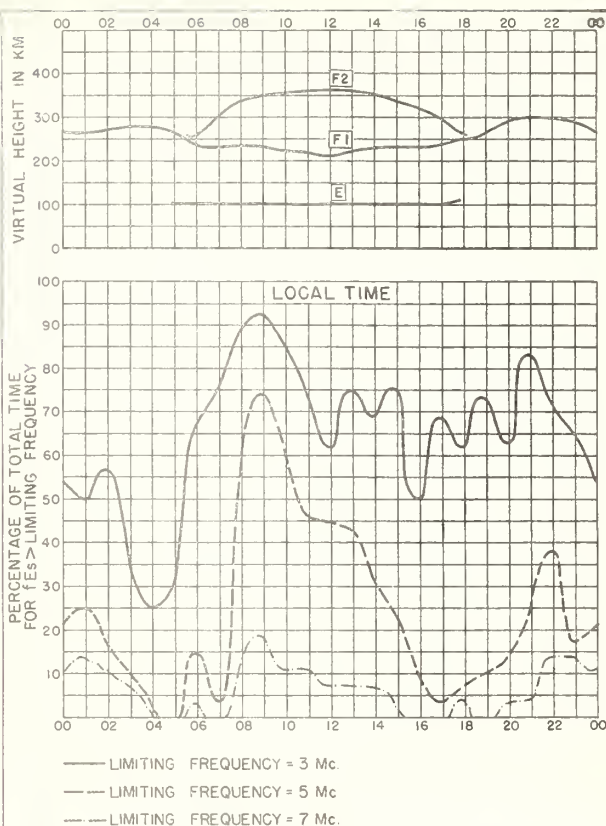


Fig. 38. CANBERRA, AUSTRALIA

NOVEMBER 1949

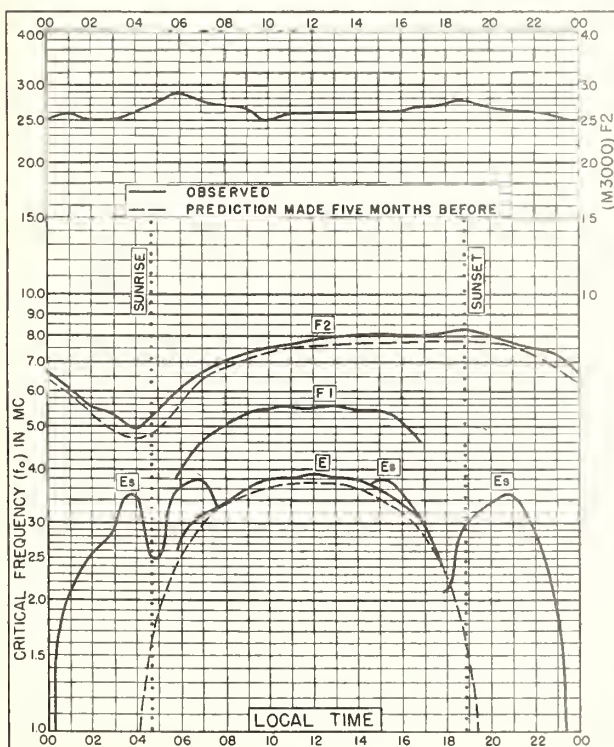


Fig. 39. HOBART, TASMANIA
42.8°S, 147.4°E

NOVEMBER 1949

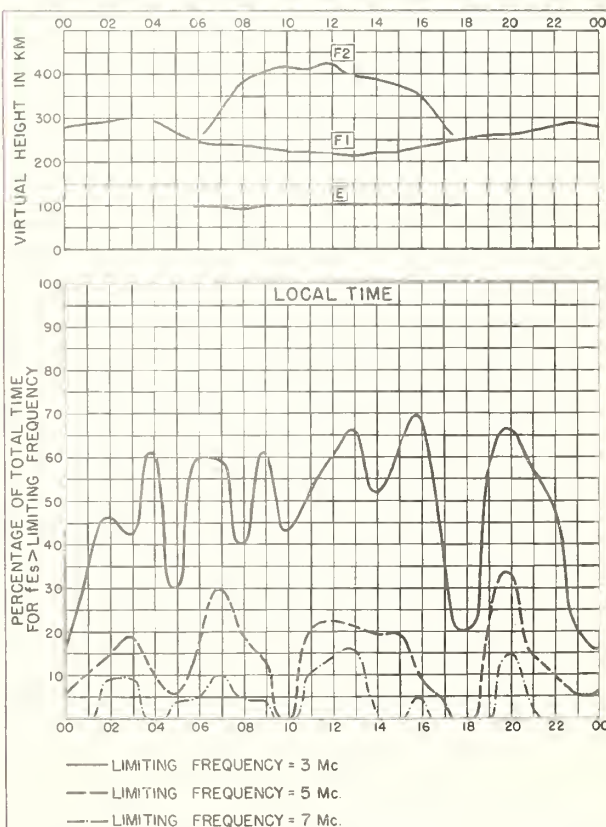


Fig. 40. HOBART, TASMANIA

NOVEMBER 1949

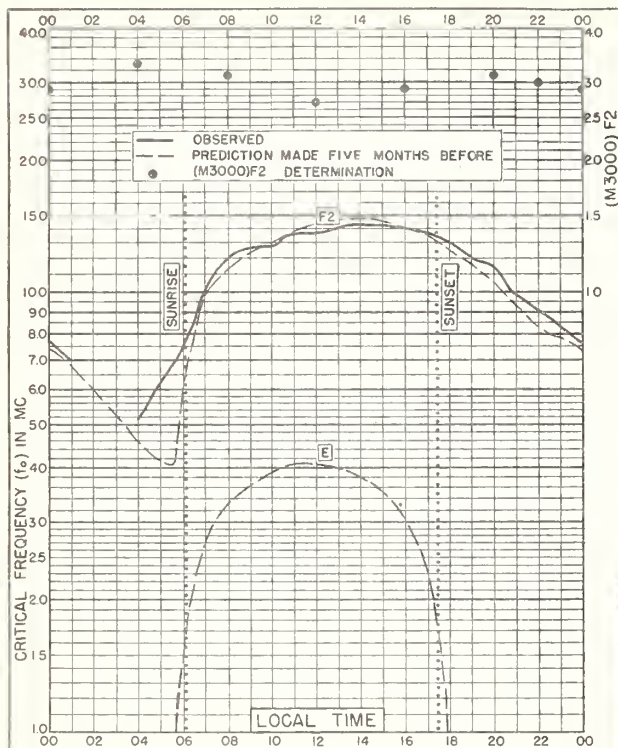


Fig 41. DELHI, INDIA
28.6°N, 77.1°E

OCTOBER 1949

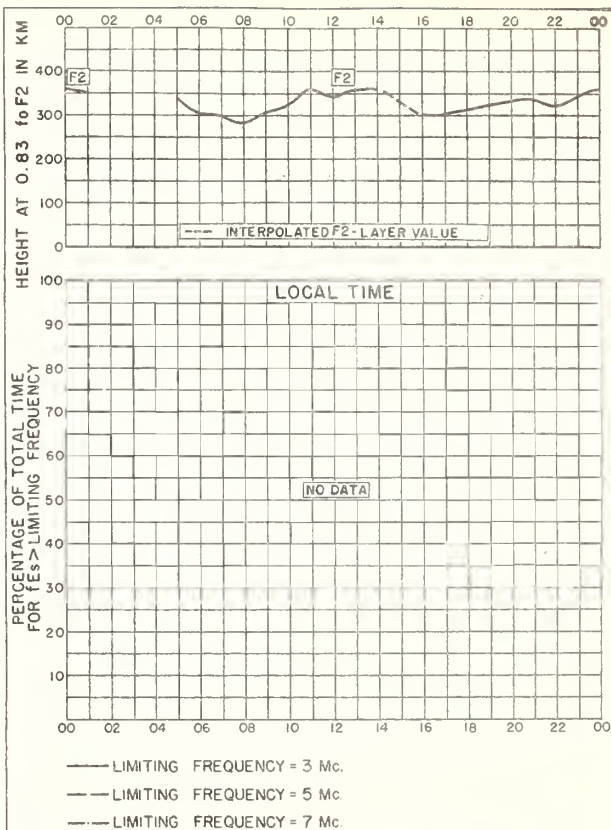


Fig 42. DELHI, INDIA

OCTOBER 1949

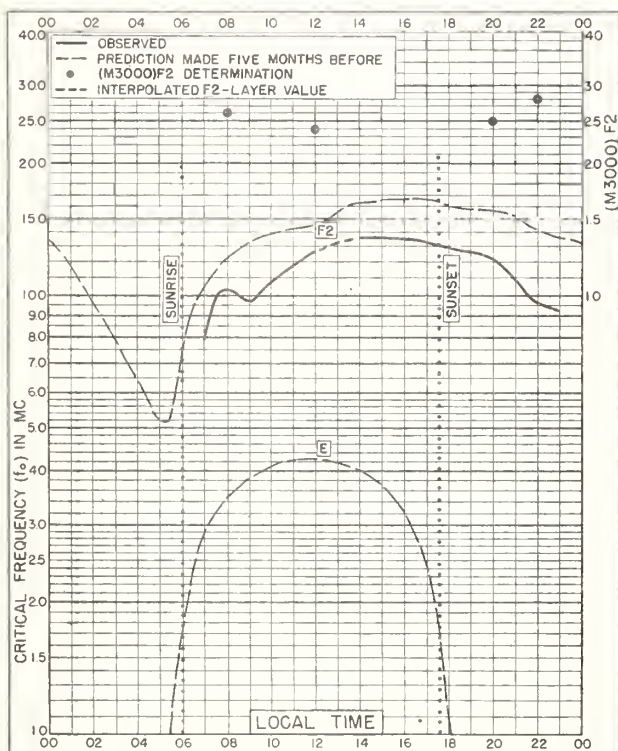


Fig.43 BOMBAY, INDIA
19.0°N, 73.0°E

OCTOBER 1949

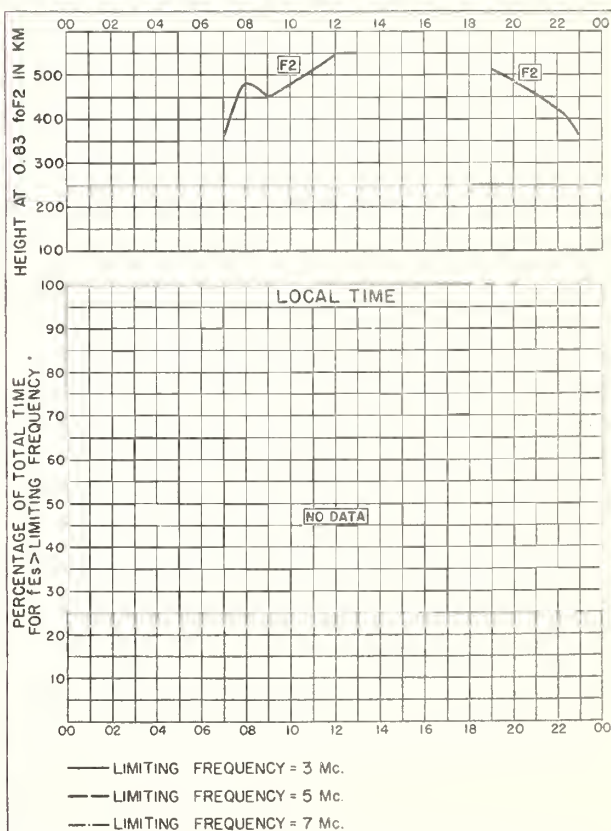
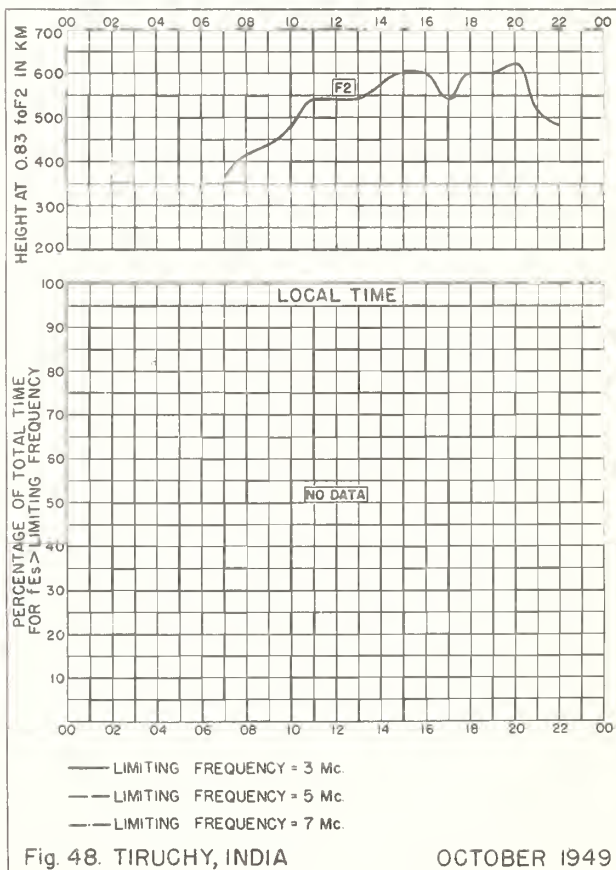
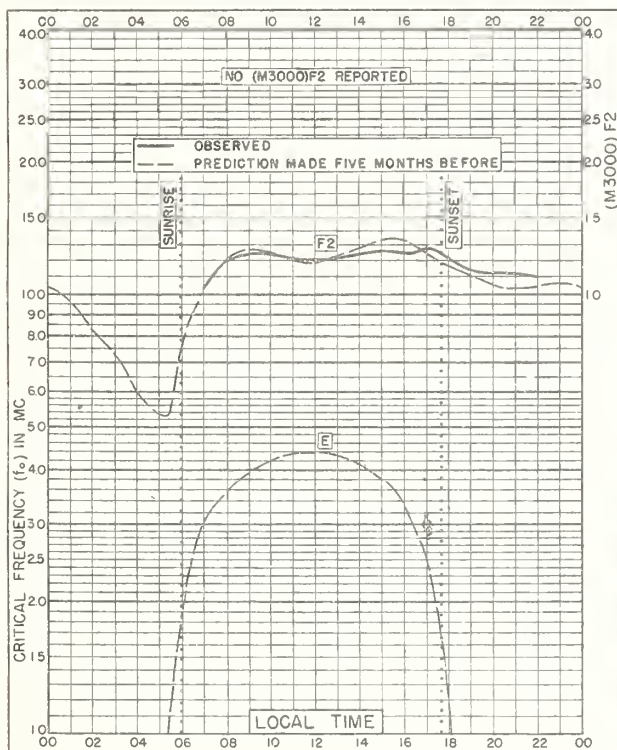
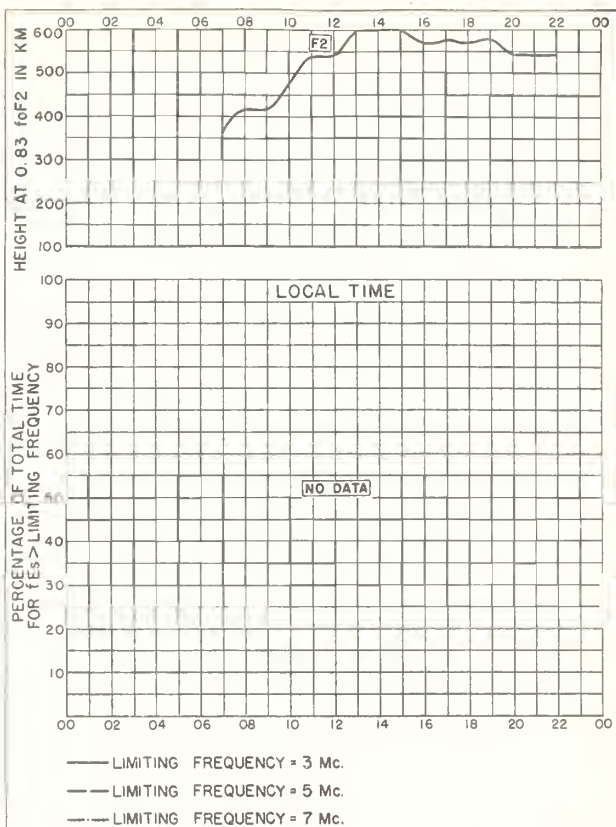
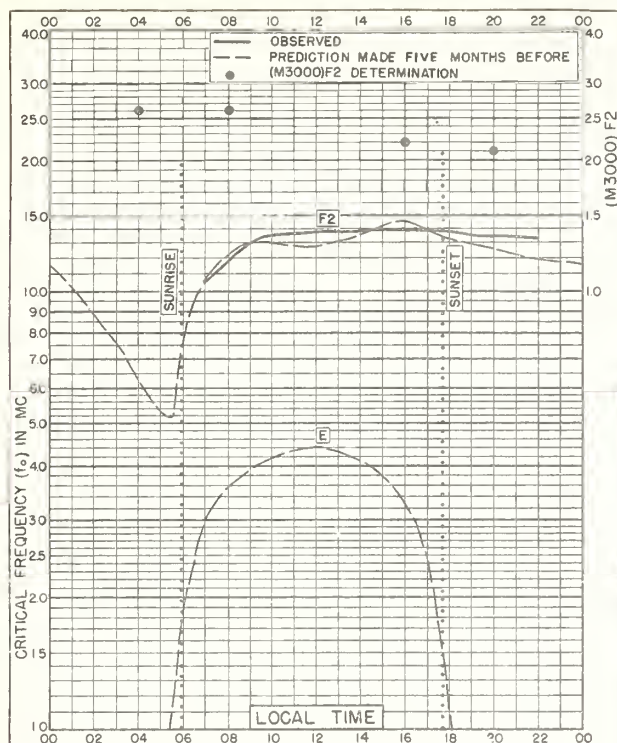


Fig.44. BOMBAY, INDIA

OCTOBER 1949



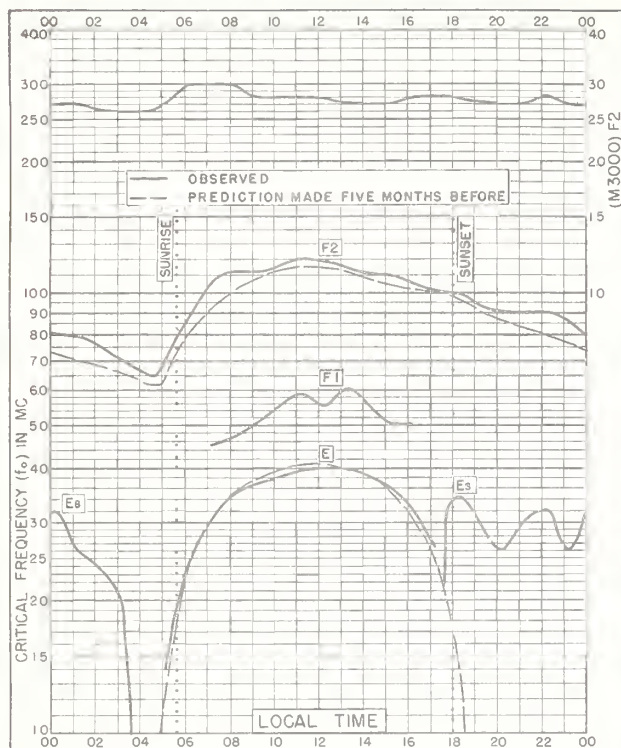


Fig. 49. BRISBANE, AUSTRALIA
27.5°S, 153.0°E

OCTOBER 1949

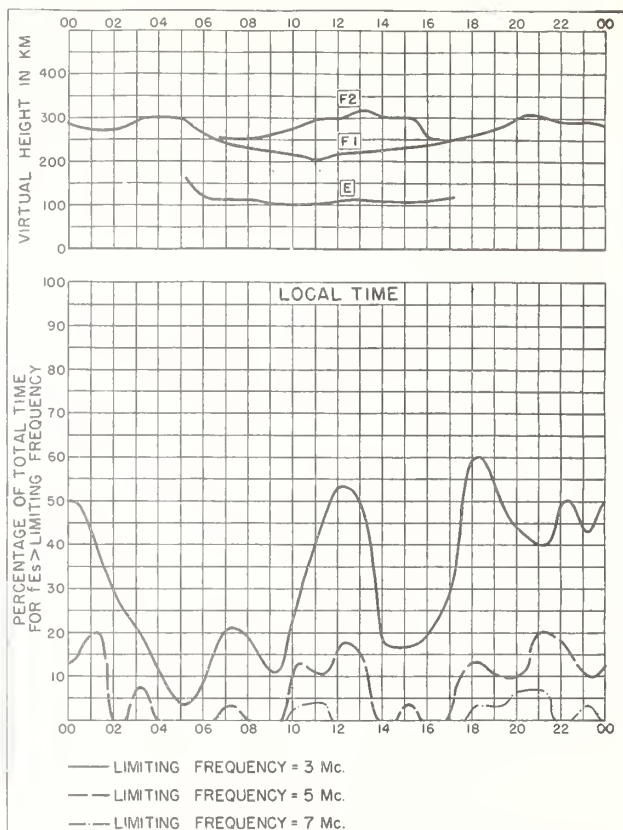


Fig. 50. BRISBANE, AUSTRALIA

OCTOBER 1949

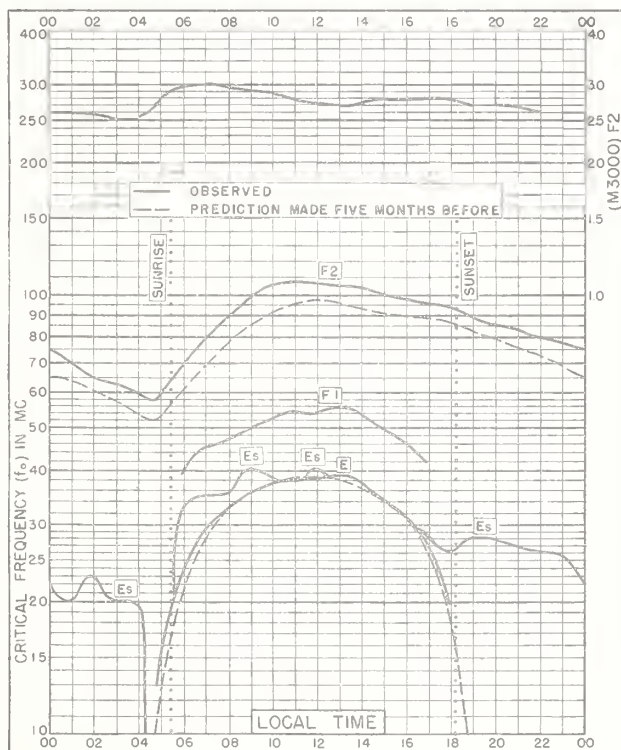


Fig. 51. CANBERRA, AUSTRALIA
35.3°S, 149.0°E

OCTOBER 1949

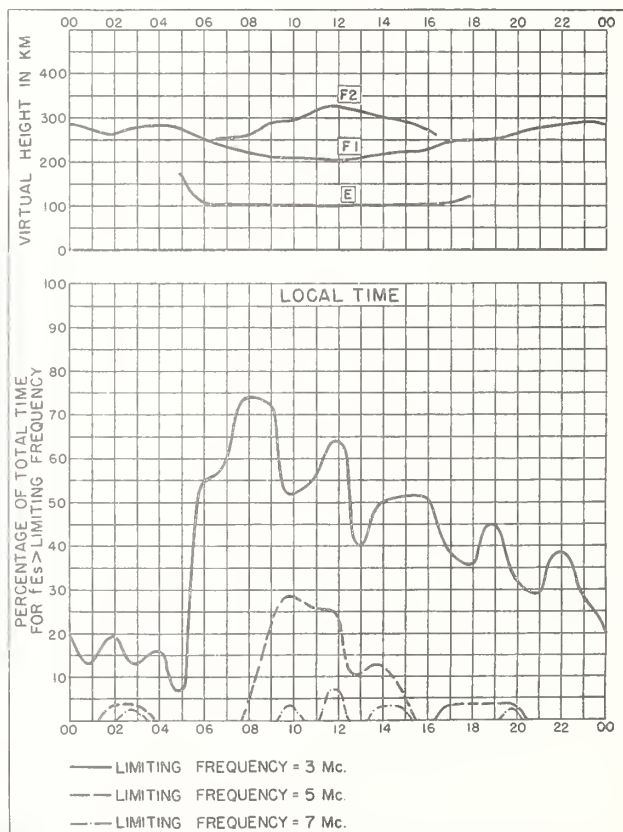


Fig. 52. CANBERRA, AUSTRALIA

OCTOBER 1949

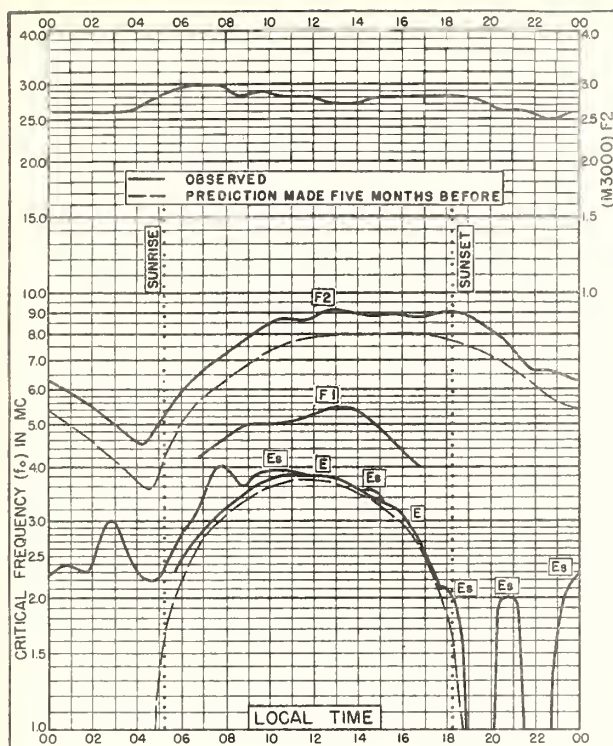


Fig. 53. HOBART, TASMANIA
42.8°S, 147.4°E

OCTOBER 1949

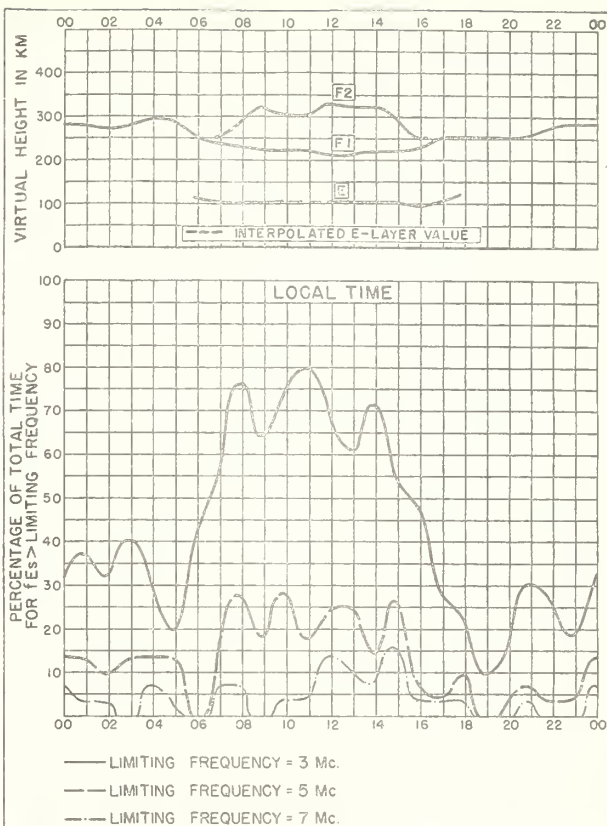


Fig. 54. HOBART, TASMANIA

OCTOBER 1949

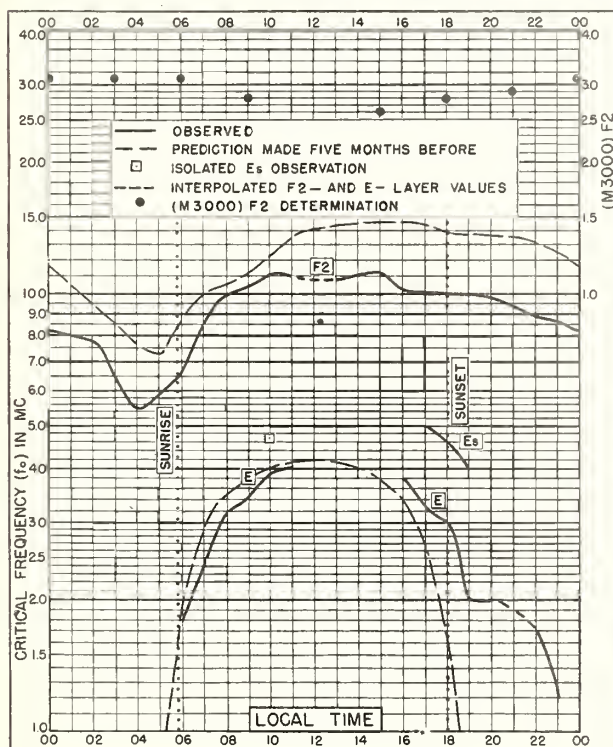


Fig. 55. CALCUTTA, INDIA
22.6°N, 88.4°E

SEPTEMBER 1949

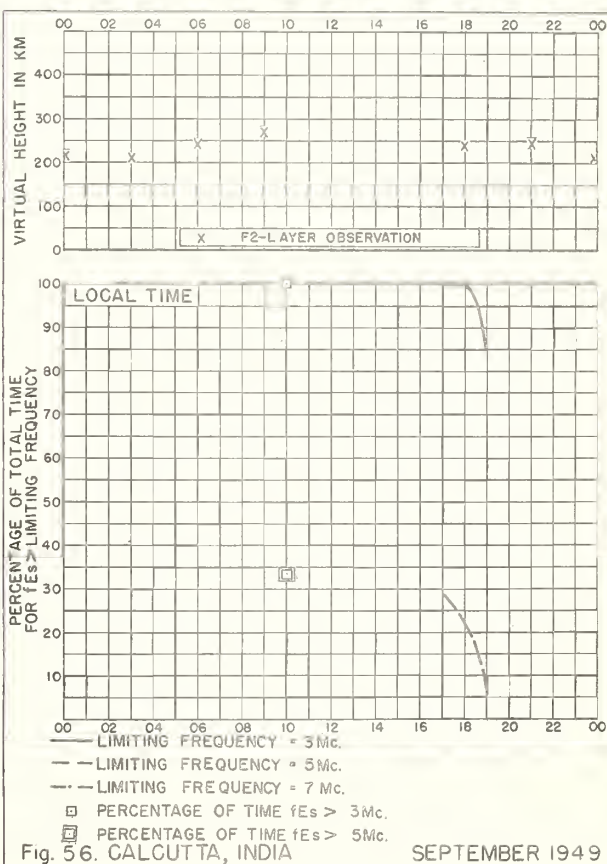


Fig. 56. CALCUTTA, INDIA

SEPTEMBER 1949

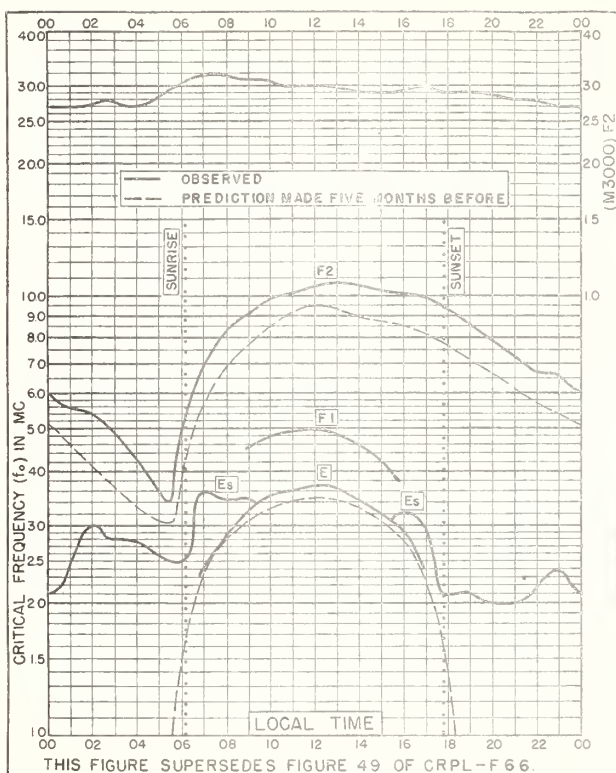


Fig. 57. HOBART, TASMANIA
42.8°S, 147.4°E

SEPTEMBER 1949

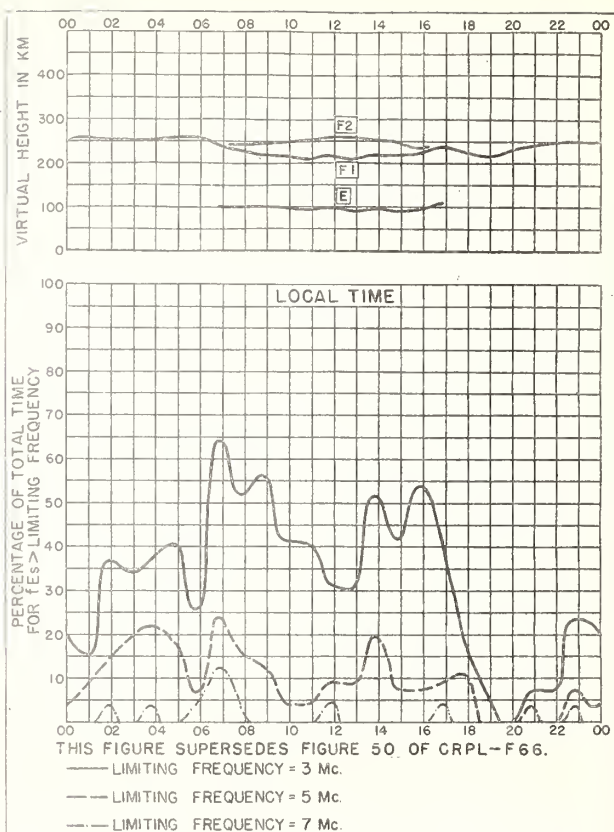


Fig. 58. HOBART, TASMANIA

SEPTEMBER 1949

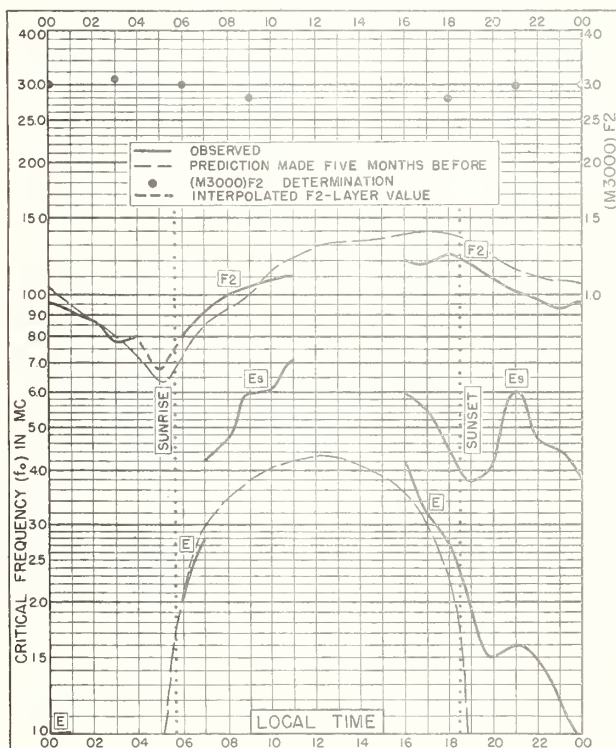


Fig. 59. CALCUTTA, INDIA
22.6°N, 88.4°E

AUGUST 1949

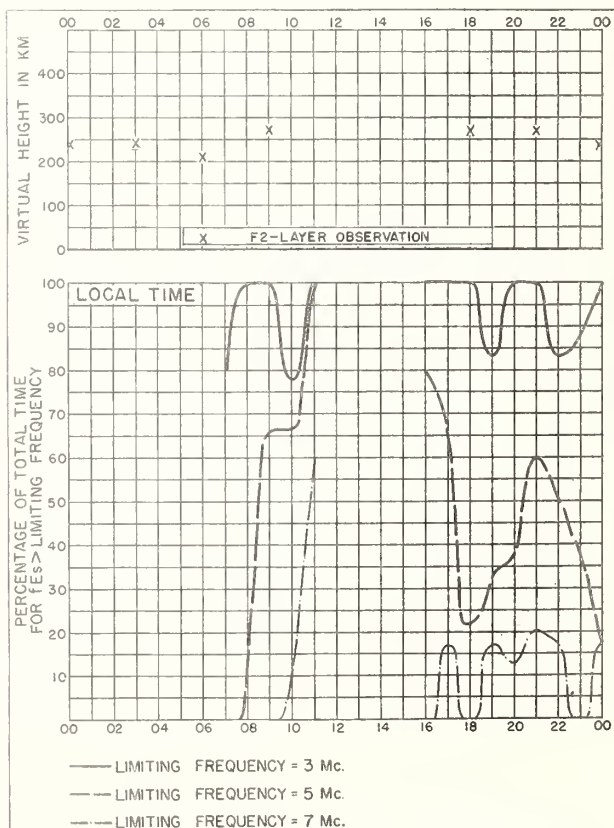


Fig. 60. CALCUTTA, INDIA

AUGUST 1949

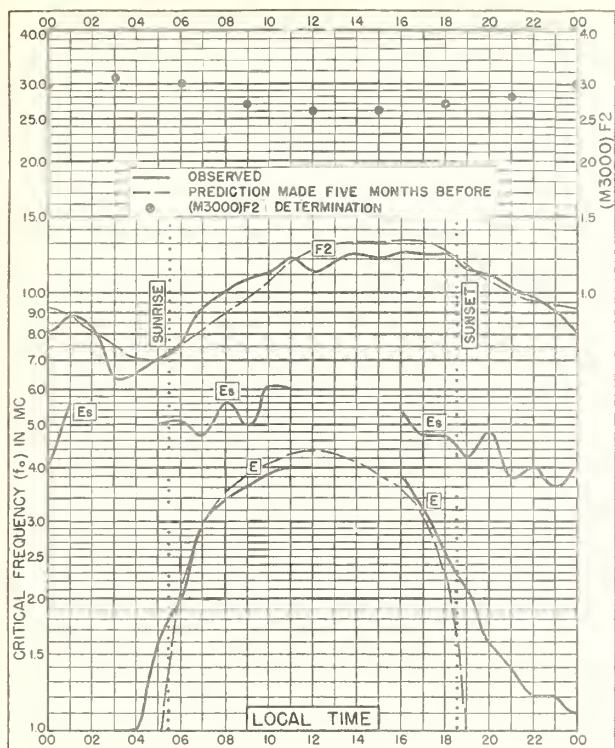


Fig. 61. CALCUTTA, INDIA
22.6°N, 88.4°E

JULY 1949

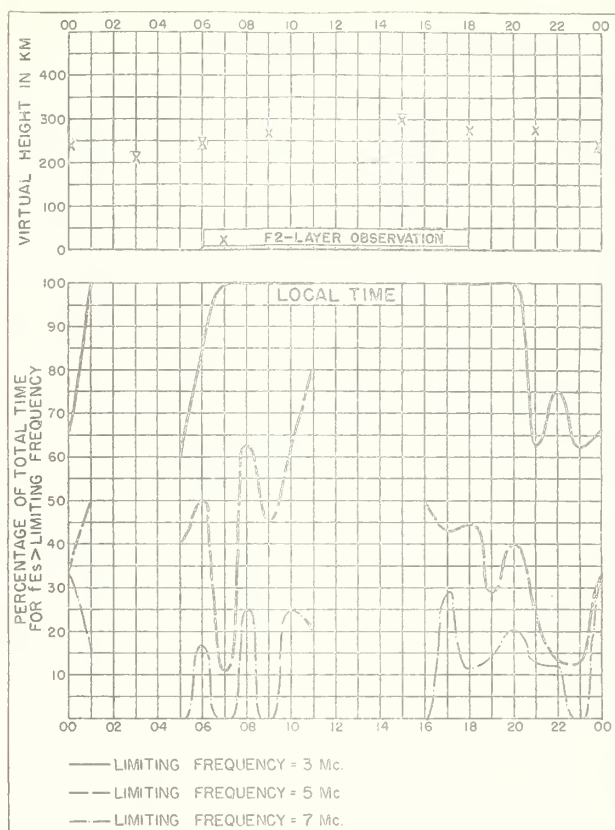


Fig. 62. CALCUTTA, INDIA

JULY 1949

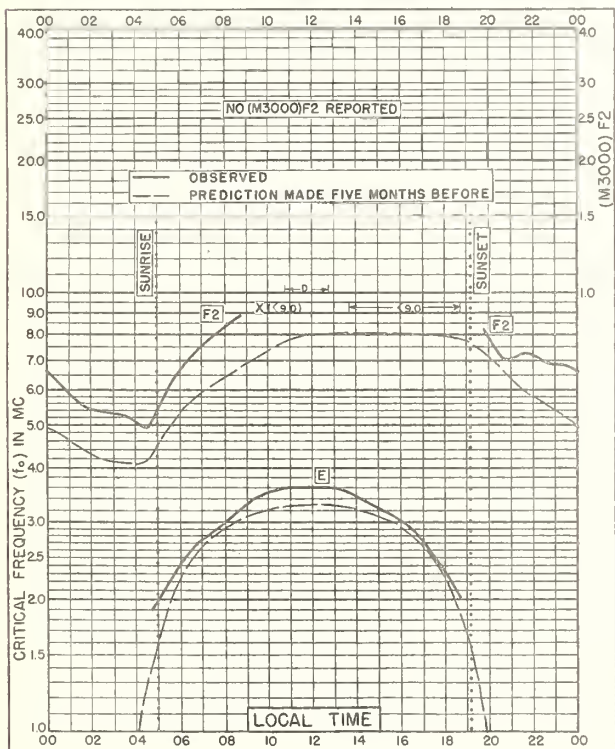


Fig. 63. OSLO, NORWAY
60.0°N, 11.0°E

APRIL 1949

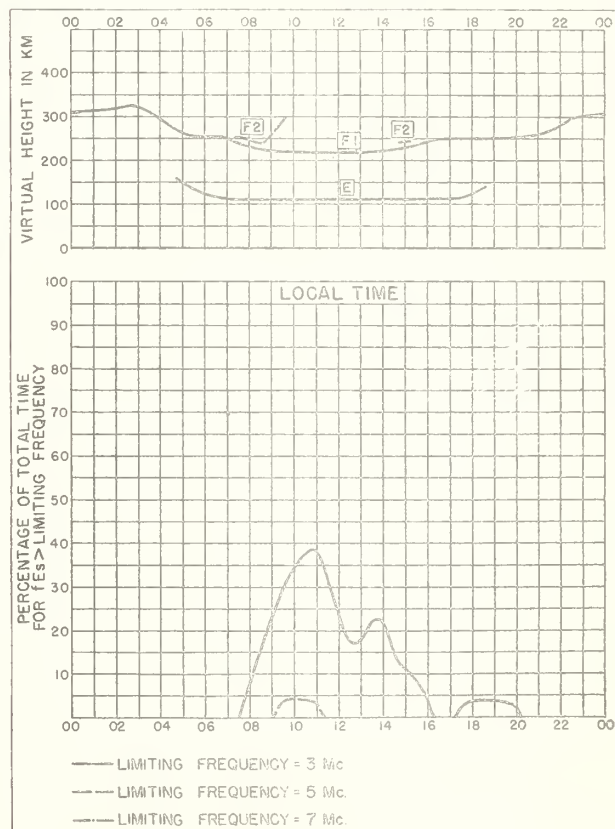


Fig. 64. OSLO, NORWAY

APRIL 1949

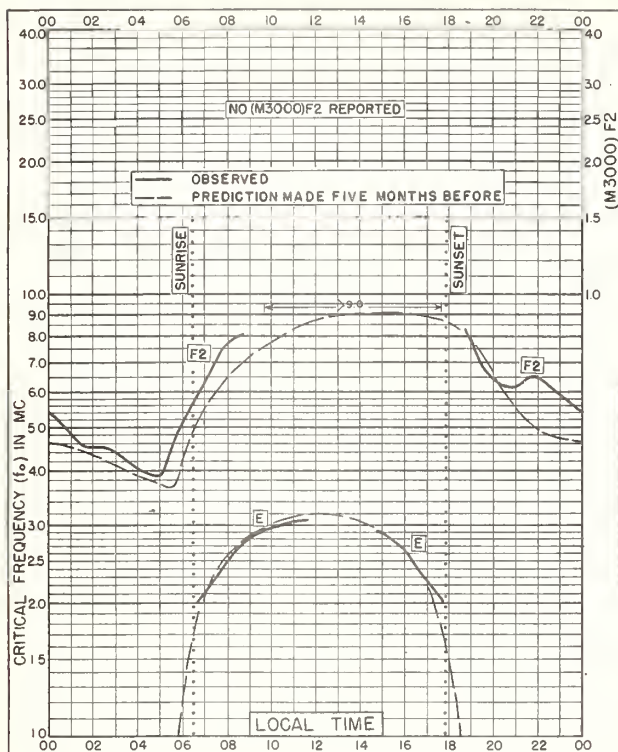


Fig. 65. OSLO, NORWAY
60.0°N, 11.0°E

MARCH 1949

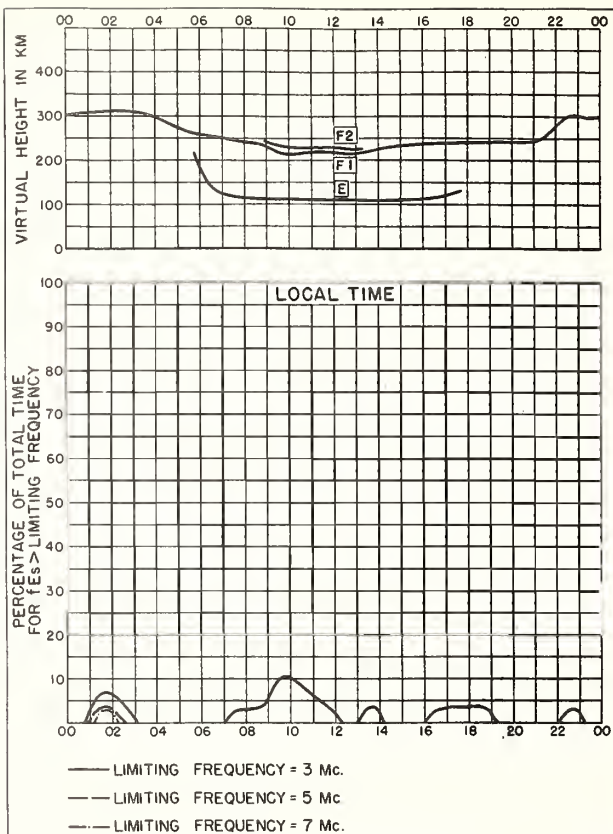


Fig. 66. OSLO, NORWAY

MARCH 1949

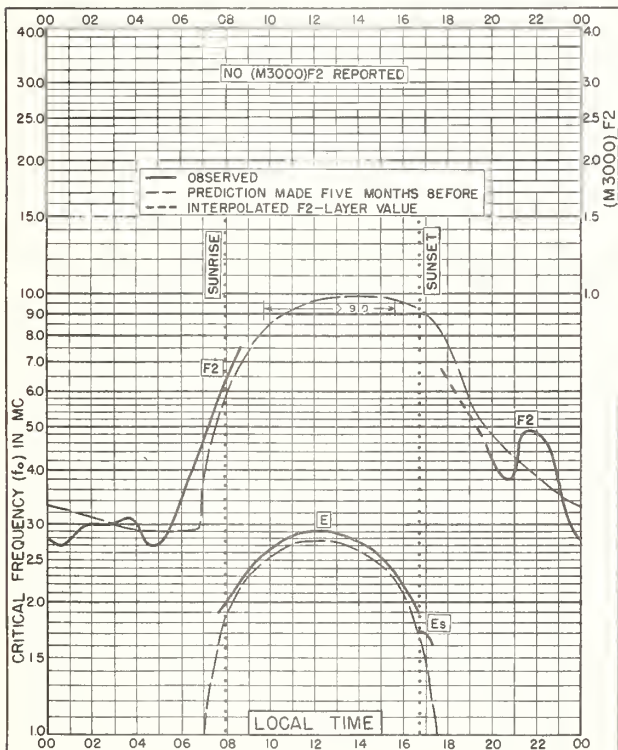


Fig. 67. OSLO, NORWAY
60.0°N, 11.0°E

FEBRUARY 1949

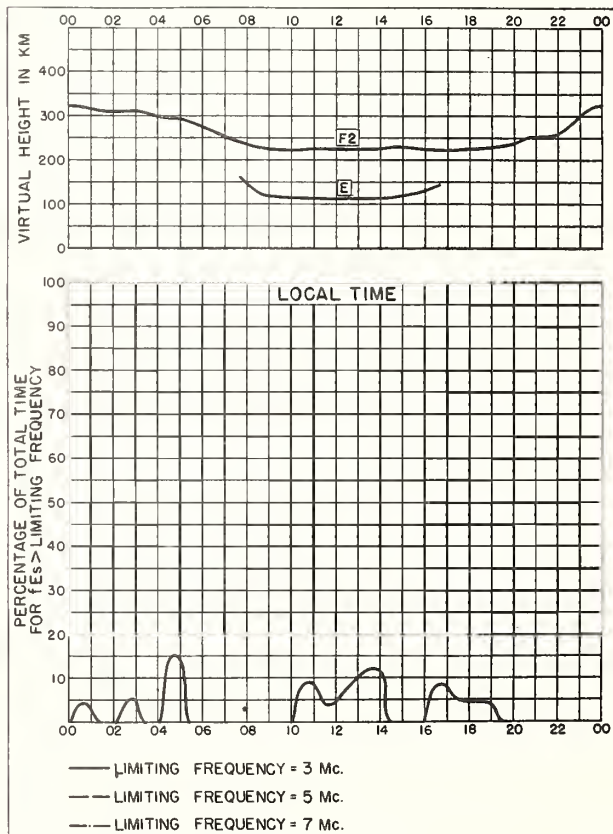


Fig. 68. OSLO, NORWAY

FEBRUARY 1949

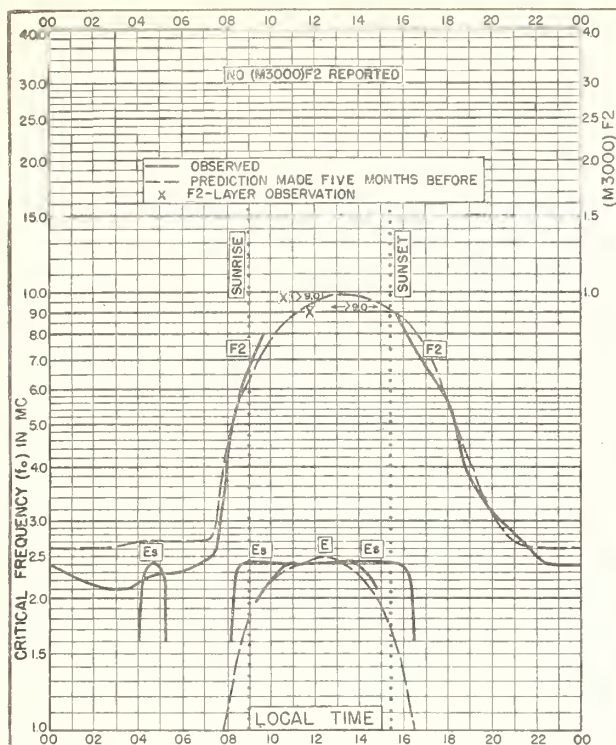


Fig. 69. OSLO, NORWAY
60.0°N, 11.0°E

JANUARY 1949

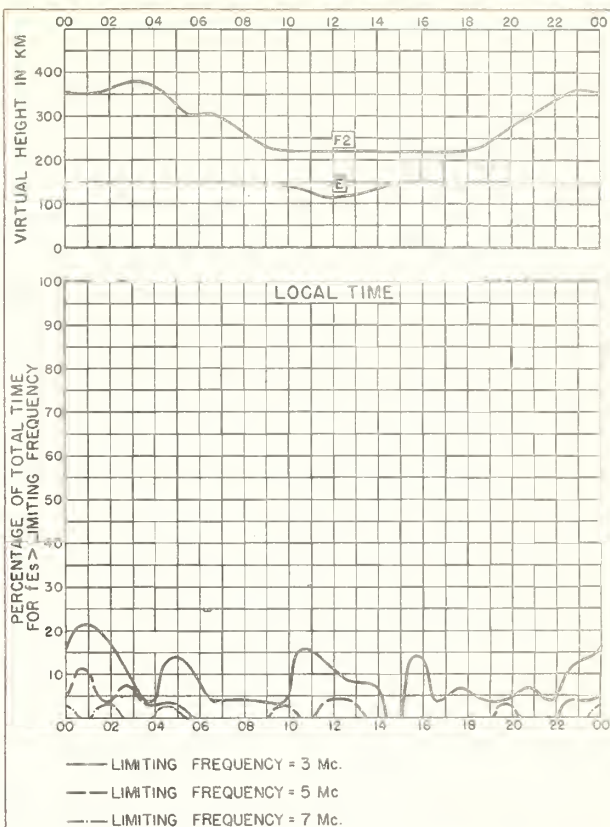


Fig. 70. OSLO, NORWAY

JANUARY 1949

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CRPL and IRPL Reports

[A list of CRPL Section Reports is available from the Central Radio Propagation Laboratory upon request]

Daily:

Radio disturbance warnings, every half hour from broadcast station WWV of the National Bureau of Standards. Telephoned and telegraphed reports of ionospheric, solar, geomagnetic, and radio propagation data.

Weekly:

CRPL-J. Radio Propagation Forecast (of days most likely to be disturbed during following month).

Semimonthly:

CRPL-Ja. Semimonthly Frequency Revision Factors for CRPL Basic Radio Propagation Prediction Reports.

Monthly:

CRPL-D. Basic Radio Propagation Predictions—Three months in advance. (Dept. of the Army, TB 11-499-, monthly supplements to TM 11-499; Dept. of the Navy, DNC-13-1 (), monthly supplements to DNC-13-1.)

CRPL-F. Ionospheric Data.

Quarterly:

*IRPL-A. Recommended Frequency Bands for Ships and Aircraft in the Atlantic and Pacific.

*IRPL-H. Frequency Guide for Operating Personnel.

Circulars of the National Bureau of Standards:

NBS Circular 462. Ionospheric Radio Propagation.

NBS Circular 465. Instructions for the Use of Basic Radio Propagation Predictions.

Reports issued in past:

IRPL-C61. Report of the International Radio Propagation Conference, 17 April to 5 May 1944.

IRPL-G1 through G12. Correlation of D. F. Errors With Ionospheric Conditions.

IRPL-R. Nonscheduled reports:

R4. Methods Used by IRPL for the Prediction of Ionosphere Characteristics and Maximum Usable Frequencies.

R5. Criteria for Ionospheric Storminess.

R6. Experimental Studies of Ionospheric Propagation as Applied to the Loran System.

R7. Second Report on Experimental Studies of Ionospheric Propagation as Applied to the Loran System.

R9. An Automatic Instantaneous Indicator of Skip Distance and MUF.

R10. A Proposal for the Use of Rockets for the Study of the Ionosphere.

R11. A Nomographic Method for Both Prediction and Observation Correlation of Ionosphere Characteristics.

R12. Short Time Variations in Ionospheric Characteristics.

R14. A Graphical Method for Calculating Ground Reflection Coefficients.

R15. Predicted Limits for 1/2-Layer Radio Transmission Throughout the Solar Cycle.

R17. Japanese Ionospheric Data—1943.

R18. Comparison of Geomagnetic Records and North Atlantic Radio Propagation Quality Figures—October 1943 Through May 1945.

R21. Notes on the Preparation of Skip-Distance and MUF Charts for Use by Direction-Finder Stations. (For distances out to 4000 km.)

R23. Solar-Cycle Data for Correlation with Radio Propagation Phenomena.

R24. Relations Between Band Width, Pulse Shape and Usefulness of Pulses in the Loran System.

R25. The Prediction of Solar Activity as a Basis for the Prediction of Radio Propagation Phenomena.

R26. The Ionosphere as a Measure of Solar Activity.

R27. Relationships Between Radio Propagation Disturbance and Central Meridian Passage of Sunspots Grouped by Distance From Center of Disc.

R30. Disturbance Rating in Values of IRPL Quality-Figure Scale from A. T. & T. Co. Transmission Disturbance Reports to Replace T. D. Figures as Reported.

R31. North Atlantic Radio Propagation Disturbances, October 1943 Through October 1945.

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R34. The Interpretation of Recorded Values of fE_s .

R35. Comparison of Percentage of Total Time of Second-Multiple E_s Reflections and That of fE_s in Excess of 3 Mc.

IRPL-T. Reports on tropospheric propagation:

T1. Radar operation and weather. (Superseded by JANP 101.)

T2. Radar coverage and weather. (Superseded by JANP 102.)

CRPL-T3. Tropospheric Propagation and Radio-Meteorology. (Reissue of Columbia Wave Propagation Group WPG-5.)

*Items bearing this symbol are distributed only by U. S. Navy. They are issued under one cover as the DNC-14 series.

